

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: 160-27351-1
TestAmerica Sample Delivery Group: SL2825
Client Project/Site: I18-006 / S18-003 / W18-003 / X18-005

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
4/13/2018 5:53:33 PM

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



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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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Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Job ID: 160-27351-1**Laboratory: TestAmerica St. Louis****Narrative****CASE NARRATIVE**

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
April 13, 2018
Attention: Scot Fitzgerald

SDG	: SL2825
Number of Samples	: 19 samples
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: March 16, 2018

II. Introduction

On March 15 and 16, 19 samples were received by TestAmerica - St. Louis for 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: I18-006, S18-003, W18-003, and X18-005

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 a narrative note; however, they are flagged "D" due to a limitation in the LIMS.

For solid matrices, all Metals analyses (including Hg) use a Standard Reference Material for the Laboratory Control Sample (LCS). Certificate for this source material may be obtained from TASL.

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, 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.

For extractable and volatile organic analyses, several analytes are considered poor performers and will not meet CHPRC QC limits. Per CHPRC direction, the lab's statistical limits have been reported. Excursions outside these statistical limits will include a non-conformance in the sections below.

IV. Definitions

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Job ID: 160-27351-1 (Continued)**Laboratory: TestAmerica St. Louis (Continued)**

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 above the MDL/RL and Method Blank is greater than 5% of the sample concentration.
- **B** - For inorganics and radiochemistry, Method Blank reported above the MDC/MDL.
- **J** - For organic analyses, the sample is estimated and less than the RL. If on Method Blank, indicates Method Blank contamination.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL/RL and Method Blank concentration is greater than 5% of the sample concentration.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For ICPMS Metals analyses, per standard practice, all 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 and will not be narrated below. Only dilutions above 2x will be narrated and considered a true dilution for these samples.
- **N** - For inorganics, rad 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.
- **P** - For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.
- **X**- Organics and Anions IC - Sample concentration over calibration and/or surrogate recovery outside QC limits.
- **X**- Inorganics - The analyte present in the original sample is > 4x the spike concentration.
- **X**- Radiochemistry - Carrier or Tracer recovery is outside limits.
- **Z**- Sample was prepped or analyzed beyond the specified sample holding time.
- **y** - RPD is outside established limits.

Volatiles**Batch: 356505**

The continuing calibration verification (CCV) associated with batch 160-356505 did not meet the minimum relative response factor QC limits for 2-Butanone, 4-Methyl-2-Pentanone and Acetone. A low level CCV was analyzed at the base reporting limit of 1ug/L and the affected analyte was detected. Target analytes recovering above the reporting limit will be qualified and reported.(CCVIS 160-356505/3).

Gamma Spec**Batch: 356426**

The sample exhibited a negative result greater in magnitude than the 3 sigma TPU for CS-137. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected. No further action is required. B3HL13 (160-27351-1)

The client has requested RPD be reported as precision criteria. The RPD tends to increase at low sample activity due to the high relative uncertainty of the measurements. At low activity the RER (relative error ratio) or DER (duplicate error ratio) are better indicators. The laboratory typically uses a dual criterion: either the RER is ≤ 1 or the RPD $\leq 40\%$ (or 30%, depending upon the matrix). The following samples did not meet the RPD criteria; however, the RER is within limits demonstrating good replicate precision.

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Job ID: 160-27351-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

Strontium

Batch: 358545

Insufficient sample volume was available to perform a sample duplicate (DU). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) was prepared to demonstrate batch precision. B3HJ43 (160-27351-6)

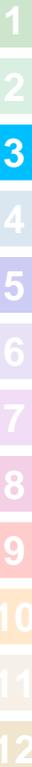
There were no observations or non-conformances associated with the following methods:

ICP Metals
ICPMS Metals
Alkalinity
Tritium

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:

Chenise Y. Lambert-Sykes
St. Louis Project Manager



Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-27351-1

SDG Number: SL2825

Login Number: 27351

List Source: TestAmerica St. Louis

List Number: 1

Creator: Daniels, Brian J

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	0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (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	tele 1165	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# I18-006-089
			Page 1 of 1

Collector: Malcom Chunn CHPRG SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I18-006	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: AEA, MARCH 2018	Logbook No.: HNF-N-506 99/116	Ice Chest No.: 605-398
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7800 66603819
Protocol SURV	Priority: 30 Days	Offsite Property No.: 7814 18A 91169 923-148

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HL13	N	W	MAR 14 2018	1056	4x1-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2

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Relinquished By: Malcom Chunn M. R. Chunn Print First and Last Name Signature Date/Time MAR 14 2018 1245	Received By: Frank McP /CHPRG Signature Date/Time MAR 14 2018 1245	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WL = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Frank McP Signature Date/Time MAR 14 2018 1400	Received By: FEDEX Signature Date/Time		
Relinquished By: FED EX Signature Date/Time	Received By: Debra Davis Signature Date/Time 3/15/18 0900		
Relinquished By: FED EX Signature Date/Time	Received By: Signature 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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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S18-003-438
		Page 1 of 1

Collector: Malcom Chunn CHPRC	SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003		Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018		Logbook No.: HNF-N-506 99/16	Ice Chest No.: 609-398
Shipped To (Lab): TestAmerica St. Louis		Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7800 660 3819
Protocol CERCLA		Priority: 30 Days	Offsite Property No.: N/A 9169

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HL14	N		MAR 14 2018	1201	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None

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Relinquished By: <u>Malcom Chunn</u> Print First and Last Name Signature Date/Time MAR 14 2018 1245	Received By: <u>Frank Wolf</u> Print First and Last Name Signature Date/Time MAR 14 2018 1245	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: <u>Frank Wolf</u> Print First and Last Name Signature Date/Time MAR 14 2018 1400	Received By: FEDEX Print First and Last Name Signature Date/Time	
Relinquished By: FED EX Print First and Last Name Signature Date/Time	Received By: <u>Jim Davis</u> Print First and Last Name Signature Date/Time 3/5/16 0800	
Relinquished By: _____ Print First and Last Name Signature Date/Time	Received By: _____ Print First and Last Name Signature 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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CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S18-003-463
		Page 1 of 1

Collector: Juan Aguilar /CHPRC SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506- 98157	Ice Chest No.: GWS-398
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7800 66603819
Protocol CERCLA	Priority: 30 Days	Offsite Property No.: N/A ATTOS

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A <div style="text-align: right; font-size: 1.2em;">9169 DL 3/14/18</div>
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HLR3	N	W	3-14-18	0854	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None

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Relinquished By: Juan Aguilar /CHPRC <i>[Signature]</i> MAR 14 2018 1155 <small>Print First and Last Name Signature Date/Time</small>	Received By: Tim Callaway /CHPRC Q. Ralphy <i>[Signature]</i> MAR 14 2018 1155 <small>Print First and Last Name Signature Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Tim Callaway /CHPRC <i>[Signature]</i> MAR 14 2018 1400 <small>Print First and Last Name Signature Date/Time</small>	Received By: FEDEX <small>Print First and Last Name Signature Date/Time</small>	
Relinquished By: FED EX <small>Print First and Last Name Signature Date/Time</small>	Received By: <i>[Signature]</i> 3/15/18 0920 <small>Print First and Last Name Signature Date/Time</small>	
Relinquished By: <small>Print First and Last Name Signature Date/Time</small>	Received By: <small>Print First and Last Name Signature Date/Time</small>	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: Date/Time:

REV.0



CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # W18-003-207		
						Page 1 of 1		
Collector: Malcom Chunn CHPRC <i>SL2825</i>		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: W18-003		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: RCRA, MARCH 2018		Logbook No.: HNF-N-506 <i>99116</i>		Ice Chest No.: <i>GLWS-398</i>				
Shipped To (Lab): TestAmerica St. Louis		Method of Shipment Commercial Carrier		Bill of Lading/Air Bill No.: <i>780066603819</i>				
Protocol RCRA		Priority: 30 Days		Offsite Property No.: <i>70911A 9103</i>				
POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1				SPECIAL INSTRUCTIONS N/A <i>9169</i> <i>OK 3/14/18</i>				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HJNO	N		<i>MAR 14 2018</i>	<i>0740</i>	1x250-mL G/P	310.1_ALKALINITY: COMMON	14 Days	Cool <=6C

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Relinquished By: Malcom Chunn <i>MR Chunn</i> Print First and Last Name Signature Date/Time	<i>MAR 14 2018 1000</i> Date/Time	Received By: Daniel Klug CHPRC <i>D Klug</i> Print First and Last Name Signature Date/Time	<i>MAR 14 2018 1000</i> Date/Time	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Daniel Klug CHPRC <i>D Klug</i> Print First and Last Name Signature Date/Time	<i>MAR 14 2018 1400</i> Date/Time	Received By: FED EX Print First and Last Name Signature Date/Time		
Relinquished By: FED EX Print First and Last Name Signature Date/Time		Received By: Brian Waters <i>B Waters</i> Print First and Last Name Signature Date/Time	<i>3/15/18 0920</i> Date/Time	
Relinquished By: FED EX Print First and Last Name Signature Date/Time		Received By: FED EX Print First and Last Name Signature Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

REV.0



CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			C.O.C. # W18-003-208			
					Page 1 of 1			
Collector:	Malcom Chunn CHPRC	SL2825	Contact/Requester:	Karen Waters-Husted	Telephone No.:	509-376-4650		
SAF No.:	W18-003		Sampling Origin:	Hanford Site	Purchase Order/Charge Code:	300071		
Project Title:	RCRA, MARCH 2018		Logbook No.:	HNF-N-506 99116	Ice Chest No.:	GWS-398		
Shipped To (Lab):	TestAmerica St. Louis		Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.:	7866603819		
Protocol	RCRA		Priority:	30 Days	Offsite Property No.:	235107A 91103 9169 2/23/18		
POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1				SPECIAL INSTRUCTIONS N/A				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HJN1	N		MAR 14 2018	0913	1x250-mL G/P	310.1_ALKALINITY: COMMON	14 Days	Cool <=6C

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Relinquished By:	MRC	MAR 14 2018	1600	Received By:	Daniel Klug CHPRC	MAR 14 2018	1000	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Print First and Last Name	Signature	Date/Time	Date/Time	Print First and Last Name	Signature	Date/Time	Date/Time	
Relinquished By:	D. Klug	MAR 14 2018	1400	Received By:	FEDEX			
Print First and Last Name	Signature	Date/Time	Date/Time	Print First and Last Name	Signature	Date/Time	Date/Time	
Relinquished By:	FEDEX			Received By:	Brown	3/15/19	0800	
Print First and Last Name	Signature	Date/Time	Date/Time	Print First and Last Name	Signature	Date/Time	Date/Time	
Relinquished By:				Received By:				
Print First and Last Name	Signature	Date/Time	Date/Time	Print First and Last Name	Signature	Date/Time	Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):					Disposed By:		Date/Time:

4/3/2018

REV.0



Collector: Malcom Churn CHPRC SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 99116	Ice Chest No.: GWS-398
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7900 6660 3 819
Protocol CERCLA	Priority: 30 Days	Offsite Property No.: 9169

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HJ43	N		MAR 14 2018	1056	1x1-L G/P	SRISO_SEP_PRECIP_GPC; COMMON	6 Months	HNO3 to pH <2

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Relinquished By: M.R. Churn <small>Malcom Churn CHPRC</small> Print First and Last Name Signature MAR 14 2018 <small>Date/Time</small>	Received By: Frank Hill <small>CHPRC</small> Print First and Last Name Signature MAR 14 2018 <small>Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Frank Hill <small>CHPRC</small> Print First and Last Name Signature MAR 14 2018 <small>Date/Time</small>	Received By: FEDEX Print First and Last Name Signature MAR 14 2018 <small>Date/Time</small>	
Relinquished By: FED EX Print First and Last Name Signature MAR 14 2018 <small>Date/Time</small>	Received By: Diana Davis Print First and Last Name Signature 3/15/18 <small>Date/Time</small>	
Relinquished By: _____ Print First and Last Name Signature _____ <small>Date/Time</small>	Received By: _____ Print First and Last Name Signature _____ <small>Date/Time</small>	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

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4/13/2018

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Collector: Juan Aguilar /CHPRC SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506-98/57	Ice Chest No.: GWS-398
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7800 6660 3819
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9/169 OK 3/14/18

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HHW4	Y	W	3-14-18	1126	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HHW2	N	W	3-14-18	1126	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HHW2	N	W	3-14-18	1126	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None

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Relinquished By: <u>Juan Aguilar</u> /CHPRC Signature: MAR 14 2018 1155 Print First and Last Name: Juan Aguilar Signature: [Signature] Date/Time: MAR 14 2018 1155	Received By: <u>Tim Callaway</u> /CHPRC Signature: MAR 14 2018 1155 Print First and Last Name: Tim Callaway Signature: [Signature] Date/Time: MAR 14 2018 1155	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: <u>Tim Callaway</u> /CHPRC Signature: MAR 14 2018 1400 Print First and Last Name: Tim Callaway Signature: [Signature] Date/Time: MAR 14 2018 1400	Received By: <u>FEDEX</u> Signature: [Signature] Date/Time: [Signature]	
Relinquished By: <u>FEDEX</u> Signature: [Signature] Date/Time: [Signature]	Received By: <u>Debra Davis</u> Signature: 3/14/18 0920 Print First and Last Name: Debra Davis Signature: [Signature] Date/Time: 3/14/18 0920	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

REV.0



CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S18-003-380
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Collector: Roger Friesz Jr. /CHPRC SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 - 97774	Ice Chest No.: GWS-398
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 780066603819
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A <div style="text-align: right; font-size: 1.2em;"> 9169 OK 3/14/18 </div>
---	--

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HFJ9	N	W	3-14-18	0821	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HFK2	Y	W	3-14-18	0921	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

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Relinquished By: Roger Friesz Jr. /CHPRC <i>[Signature]</i> MAR 14 2018 1100 <small>Print First and Last Name Signature Date/Time</small>	Received By: Daniel Klug /CHPRC <i>[Signature]</i> MAR 14 2018 1160 <small>Print First and Last Name Signature Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other		
Relinquished By: Daniel Klug /CHPRC <i>[Signature]</i> MAR 14 2018 1400 <small>Print First and Last Name Signature Date/Time</small>	Received By: FEDEX <small>Print First and Last Name Signature Date/Time</small>			
Relinquished By: FEDEX <small>Print First and Last Name Signature Date/Time</small>	Received By: <i>[Signature]</i> 3/15/18 0920 <small>Print First and Last Name Signature Date/Time</small>			
Relinquished By: <small>Print First and Last Name Signature Date/Time</small>	Received By: <small>Print First and Last Name Signature Date/Time</small>			
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

REV.0



Collector: Kathy Turner CHPRC	SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071	
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506-100-2	Ice Chest No.: GWS-398	
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: <i>788 780066603819</i>	
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: <i>9169 DR 3/14/18</i>	

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
---	------------------------------------

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HH75	Y	W	MAR 14 2018	1040	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HH72	N	W	↓	1015	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

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Relinquished By: Kathy Turner <i>Kathy Turner</i> MAR 14 2018 1040 Print First and Last Name Signature Date/Time	Received By: Daniel Klug <i>D. Klug</i> MAR 14 2018 1040 Print First and Last Name Signature Date/Time	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Daniel Klug <i>D. Klug</i> MAR 14 2018 1400 Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time	
Relinquished By: FED EX Print First and Last Name Signature Date/Time	Received By: <i>David</i> 3/15/18 0920 Print First and Last Name Signature Date/Time	
Relinquished By: _____ Print First and Last Name Signature Date/Time	Received By: _____ Print First and Last Name Signature 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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4/11/2018

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Collector: **Kathy Turner /CHPRC** *SL2825* Contact/Requester: Karen Waters-Husted Telephone No.: 509-376-4650
 SAF No.: S18-003 Sampling Origin: Hanford Site Purchase Order/Charge Code: 300071
 Project Title: CERCLA, MARCH 2018 Logbook No.: HNF-N-506 -100-2 Ice Chest No.: *GWS-398*
 Shipped To (Lab): TestAmerica St. Louis Method of Shipment Commercial Carrier Bill of Lading/Air Bill No.: *780066603819*
 Protocol CERCLA Priority: 30 Days Offsite Property No.: *N/A*

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

SPECIAL INSTRUCTIONS
 N/A
9169 DW 3/14/18

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HJ06	Y	W	<i>MAR 14 2018</i>	<i>0922</i>	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HJ03	N	W	↓	↓	1x250-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B3HJ03	N	W	↓	↓	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

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Relinquished By: Kathy Turner /CHPRC <i>Kathy Turner</i> MAR 14 2018 <i>1040</i> Print First and Last Name Signature Date/Time	Received By: Daniel Klug /CHPRC <i>D. Klug</i> MAR 14 2018 <i>1040</i> Print First and Last Name Signature Date/Time	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Daniel Klug /CHPRC <i>D. Klug</i> MAR 14 2018 <i>1400</i> Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time		
Relinquished By: FEDEX Print First and Last Name Signature Date/Time	Received By: <i>Brian David</i> <i>B-D</i> 3/15/18 <i>0940</i> Print First and Last Name Signature Date/Time		
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature 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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Collector: Roger Frieaz Jr. /CHPRC SL2825	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 -97/74	Ice Chest No.: GWS-398
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 782066603819
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9169 9163

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A <div style="text-align: right; font-size: 1.5em; margin-top: 10px;">9169</div> <div style="text-align: right; margin-top: 10px;">PR 3/14/18</div>
---	---

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HFL9	Y	W	3-14-18	0835	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HFL6	N	W	3-14-18	0835	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

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Relinquished By: Roger Frieaz Jr. /CHPRC [Signature] Print First and Last Name Signature Date/Time: MAR 14 2018 1100	Received By: Daniel Klug /CHPRC D. KO Print First and Last Name Signature Date/Time: MAR 14 2018 1100	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Daniel Klug /CHPRC D. KO Print First and Last Name Signature Date/Time: MAR 14 2018 1400	Received By: FEDEX Print First and Last Name Signature Date/Time:	
Relinquished By: FED EX Print First and Last Name Signature Date/Time:	Received By: [Signature] Print First and Last Name Signature Date/Time: 3/15/18 0900	
Relinquished By: Print First and Last Name Signature Date/Time:	Received By: Print First and Last Name Signature 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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780066603819

Ship date:

Wed 3/14/2018

Richland, WA US

Actual delivery:

Thu 3/15/2018 9:09 am

EARTH CITY, MO US

Delivered

Signed for by: B.DANIELS

Travel History

Date/Time	Activity	Location
3/15/2018 - Thursday		
9:09 am	Delivered	EARTH CITY, MO
7:07 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:02 am	At local FedEx facility	EARTH CITY, MO
5:05 am	At destination sort facility	BERKELEY, MO
4:18 am	Departed FedEx location	MEMPHIS, TN
12:27 am	Arrived at FedEx location	MEMPHIS, TN
3/14/2018 - Wednesday		
4:48 pm	Left FedEx origin facility	PASCO, WA
3:36 pm	Shipment information sent to FedEx	
3:18 pm	Picked up	PASCO, WA

Shipment Facts

Tracking Number	780066603819	Service	FedEx Priority Overnight
Weight	66 lbs / 29.94 kgs	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	66 lbs / 29.94 kgs	Terms	Third Party
Shipper reference	9169	Packaging	Your Packaging
Special handling section	Deliver Weekday, Direct Signature Required	Standard transit	3/15/2018 by 10:30 am

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-27366-1

SDG Number: SL2825

Login Number: 27366

List Number: 1

Creator: Taylor, Kristene N

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	1.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Collector: MIKE ESPARZA CHPRC	Contact/Requester: WATERS-HUSTED, K	Telephone No.: 376-4650
SAF No.: X18-005	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: Groundwater Background Study,	Logbook No.: HNF-N-506 99/17	Ice Chest No.: GWS-375
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 780094934584
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9178

POSSIBLE SAMPLE HAZARDS/REMARK *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 Batch with A, I, S, and W SAFs.
--	--

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HLC5	N	W	MAR 15 2018	0931	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

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Relinquished By: Mike Esparza <small>Print First and Last Name</small> <i>Signature</i> MAR 15 2018 <small>Date/Time</small>	Received By: Lesly Wall <small>Print First and Last Name</small> <i>Signature</i> MAR 15 2018 <small>Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Lesly Wall <small>Print First and Last Name</small> <i>Signature</i> MAR 15 2018 <small>Date/Time</small>	Received By: FEDEX <small>Print First and Last Name</small> <i>Signature</i> <small>Date/Time</small>		
Relinquished By: FED EX <small>Print First and Last Name</small> <i>Signature</i> <small>Date/Time</small>	Received By: Kristene Taylor <small>Print First and Last Name</small> <i>Signature</i> 3/16/18 0900 <small>Date/Time</small>		
Relinquished By: <small>Print First and Last Name</small> <i>Signature</i> <small>Date/Time</small>	Received By: <small>Print First and Last Name</small> <i>Signature</i> <small>Date/Time</small>		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

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780094934584

Ship date:

Thu 3/15/2018

Actual delivery:

Fri 3/16/2018 8:56 am

Richland, WA US

Delivered

Signed for by: K.TAYLOR

EARTH CITY, MO US

2 Piece shipment

Travel History

Date/Time	Activity	Location
- 3/16/2018 - Friday		
8:56 am	Delivered	EARTH CITY, MO
6:57 am	On FedEx vehicle for delivery	EARTH CITY, MO
6:51 am	At local FedEx facility	EARTH CITY, MO
5:16 am	At destination sort facility	BERKELEY, MO
4:27 am	Departed FedEx location	MEMPHIS, TN
12:41 am	Arrived at FedEx location	MEMPHIS, TN
- 3/15/2018 - Thursday		
4:47 pm	Left FedEx origin facility	PASCO, WA
3:40 pm	Shipment information sent to FedEx	
3:18 pm	Picked up	PASCO, WA

Shipment Facts

Tracking Number	780094934584	Service	FedEx Priority Overnight
Master tracking number	780094934551	Weight	86 lbs / 39.01 kgs
Dimensions	26x16x16 in.	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	2
Total shipment weight	86 lbs / 39.01 kgs	Terms	Third Party
Shipper reference	ptr# 9178	Packaging	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge, Direct Signature Required	Standard transit	3/16/2018 by 10:30 am

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-27367-1

SDG Number: SL2825

Login Number: 27367

List Source: TestAmerica St. Louis

List Number: 1

Creator: Taylor, Kristene N

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	0.3,0.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2MHill Plateau <i>SL2825</i> Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I18-006-093
Page 1 of 1		

Collector: Juan Aguilar <small>ICHPRC</small>	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I18-006	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: AEA, MARCH 2018	Logbook No.: HNF-N-506-98/58	Ice Chest No.: GWS-511
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 780088196821
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9177

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
---	------------------------------------

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HL45	N	W	3-15-18	0901	4x1-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2

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Relinquished By: Juan Aguilar <small>ICHPRC</small> <i>[Signature]</i>	Received By: Tim Callaway <small>ICHPRC</small> <i>[Signature]</i>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Tim Callaway <small>ICHPRC</small> <i>[Signature]</i>	Received By: Troy L Bacon <small>CHPRC</small> <i>[Signature]</i>	
Relinquished By: Troy L Bacon <small>CHPRC</small> <i>[Signature]</i>	Received By: FEDEX	
Relinquished By: FED EX	Received By: Christine Taylor <small>[Signature]</small>	
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 <i>522825</i> Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# I18-006-107
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Collector: Juan Aguilar <small>IC/PRC</small>	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I18-006	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: AEA, MARCH 2018	Logbook No.: HNF-N-506-98157	Ice Chest No.: <i>6205-320</i>
Shipped To (Lab): TestAmerica St. Louis	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: <i>780094934551</i>
Protocol: SURV	Priority: 30 Days	Offsite Property No.: <i>9178</i>

POSSIBLE SAMPLE HAZARDS/REMARK ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS N/A
---	------------------------------------

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HLV4	N	W	<i>3-14-18</i>	<i>1426</i>	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None

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04/13/2018

Relinquished By: <i>Juan Aguilar</i> <small>IC/PRC</small> <i>MAR 14 2018 1446</i> <small>Print First and Last Name Signature Date/Time</small>	Received By: <i>SSU #1</i> <i>MAR 14 2018 1446</i> <small>Print First and Last Name Signature Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: <i>SSU-1</i> <i>MAR 15 2018 1130</i> <small>Print First and Last Name Signature Date/Time</small>	Received By: <i>Lashy Wall</i> <small>IC/PRC</small> <i>MAR 15 2018 1130</i> <small>Print First and Last Name Signature Date/Time</small>		
Relinquished By: <i>Lashy Wall</i> <small>IC/PRC</small> <i>MAR 15 2018 1400</i> <small>Print First and Last Name Signature Date/Time</small>	Received By: FEDEX <small>Print First and Last Name Signature Date/Time</small>		
Relinquished By: FED EX <small>Print First and Last Name Signature Date/Time</small>	Received By: <i>Kristine Taylor</i> <i>3/16/18 0900</i> <small>Print First and Last Name Signature Date/Time</small>		
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:



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780088696821

Ship date:

Thu 3/15/2018

Actual delivery:

Fri 3/16/2018 8:56 am

Richland, WA US

Delivered

Signed for by: K.TAYLOR

EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
- 3/16/2018 - Friday		
8:56 am	Delivered	EARTH CITY, MO
6:50 am	On FedEx vehicle for delivery	EARTH CITY, MO
6:43 am	At local FedEx facility	EARTH CITY, MO
5:16 am	At destination sort facility	BERKELEY, MO
4:27 am	Departed FedEx location	MEMPHIS, TN
12:41 am	Arrived at FedEx location	MEMPHIS, TN
- 3/15/2018 - Thursday		
4:47 pm	Left FedEx origin facility	PASCO, WA
1:17 pm	Shipment information sent to FedEx	
11:19 am	Picked up	PASCO, WA

Shipment Facts

Tracking Number	780088696821	Service	FedEx Priority Overnight
Weight	88 lbs / 39.92 kgs	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	88 lbs / 39.92 kgs	Terms	Third Party
Shipper reference	ptr# 9177/cooler# gws-571	Packaging	Your Packaging
Special handling section	Deliver Weekday, Direct Signature Required	Standard transit	3/16/2018 by 10:30 am

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Ship date:

Thu 3/15/2018

Actual delivery:

Fri 3/16/2018 8:56 am

Richland, WA US

Delivered

Signed for by: K.TAYLOR

EARTH CITY, MO US

2 Piece shipment

Travel History

Date/Time	Activity	Location
3/16/2018 - Friday		
8:56 am	Delivered	EARTH CITY, MO
6:49 am	On FedEx vehicle for delivery	EARTH CITY, MO
6:43 am	At local FedEx facility	EARTH CITY, MO
5:16 am	At destination sort facility	BERKELEY, MO
4:27 am	Departed FedEx location	MEMPHIS, TN
12:41 am	Arrived at FedEx location	MEMPHIS, TN
3/15/2018 - Thursday		
4:47 pm	Left FedEx origin facility	PASCO, WA
3:40 pm	Shipment information sent to FedEx	
3:18 pm	Picked up	PASCO, WA

Shipment Facts

Tracking Number	780094934551	Service	FedEx Priority Overnight
Master tracking number	780094934551	Weight	92 lbs / 41.73 kgs
Dimensions	28x15x18 in.	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	2
Total shipment weight	178 lbs / 80.74 kgs	Terms	Third Party
Shipper reference	ptr# 9178	Packaging	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge, Direct Signature Required	Standard transit	3/16/2018 by 10:30 am

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Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.

GC/MS VOA TICs

Qualifier	Qualifier Description
T	MS, MSD: Recovery exceeds upper or lower control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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.
B	Estimated result. Result is less than the RL, but greater than MDL

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
y	Duplicate analysis not within control limits.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL
6010C	Metals (ICP)	SW846	TAL SL
6020A	Metals (ICP/MS)	SW846	TAL SL
310.1	Alkalinity	MCAWW	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL
SR-03-RC	Total Beta Strontium (GFPC)	DOE	TAL SL

Protocol References:

- DOE = U.S. Department of Energy
- EPA = US Environmental Protection Agency
- 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



Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-27351-1	B3HL13	Water	03/14/18 10:56	03/15/18 09:20
160-27351-2	B3HL14	Water	03/14/18 12:01	03/15/18 09:20
160-27351-3	B3HLR3	Water	03/14/18 08:54	03/15/18 09:20
160-27351-4	B3HJN0	Water	03/14/18 07:40	03/15/18 09:20
160-27351-5	B3HJN1	Water	03/14/18 09:13	03/15/18 09:20
160-27351-6	B3HJ43	Water	03/14/18 10:56	03/15/18 09:20
160-27351-7	B3HHW4	Water	03/14/18 11:26	03/15/18 09:20
160-27351-8	B3HHW2	Water	03/14/18 11:26	03/15/18 09:20
160-27351-9	B3HFJ9	Water	03/14/18 08:21	03/15/18 09:20
160-27351-10	B3HFK2	Water	03/14/18 08:21	03/15/18 09:20
160-27351-11	B3HH75	Water	03/14/18 10:15	03/15/18 09:20
160-27351-12	B3HH72	Water	03/14/18 10:15	03/15/18 09:20
160-27351-13	B3HJ06	Water	03/14/18 09:22	03/15/18 09:20
160-27351-14	B3HJ03	Water	03/14/18 09:22	03/15/18 09:20
160-27351-15	B3HFL9	Water	03/14/18 08:55	03/15/18 09:20
160-27351-16	B3HFL6	Water	03/14/18 08:55	03/15/18 09:20
160-27366-1	B3HLC5	Water	03/15/18 09:31	03/16/18 09:00
160-27367-1	B3HL45	Water	03/15/18 09:01	03/16/18 09:00
160-27367-2	B3HLV4	Water	03/14/18 14:26	03/16/18 09:00



Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 8260C - Volatile Organic Compounds (GC/MS)

Client Sample ID: B3HLC5
Date Collected: 03/15/18 09:31
Date Received: 03/16/18 09:00

Lab Sample ID: 160-27366-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.17	U	1.0	0.17	ug/L			03/20/18 09:51	1
1,1,2-Trichloroethane	0.13	U	1.0	0.13	ug/L			03/20/18 09:51	1
1,1-Dichloroethane	0.070	U	1.0	0.070	ug/L			03/20/18 09:51	1
1,1-Dichloroethene	0.10	U	1.0	0.10	ug/L			03/20/18 09:51	1
1,2-Dichloroethane	0.22	U	1.0	0.22	ug/L			03/20/18 09:51	1
2-Butanone (MEK)	0.47	U	5.0	0.47	ug/L			03/20/18 09:51	1
4-Methyl-2-pentanone (MIBK)	0.22	U	5.0	0.22	ug/L			03/20/18 09:51	1
Acetone	4.7		2.0	0.55	ug/L			03/20/18 09:51	1
Benzene	0.10	U	1.0	0.10	ug/L			03/20/18 09:51	1
Carbon disulfide	0.10	U	1.0	0.10	ug/L			03/20/18 09:51	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/20/18 09:51	1
Chlorobenzene	0.11	U	1.0	0.11	ug/L			03/20/18 09:51	1
Chloroform	0.10	U	1.0	0.10	ug/L			03/20/18 09:51	1
Ethylbenzene	0.12	U	1.0	0.12	ug/L			03/20/18 09:51	1
Methylene Chloride	1.5		1.0	0.27	ug/L			03/20/18 09:51	1
Tetrachloroethene	0.18	U	1.0	0.18	ug/L			03/20/18 09:51	1
Toluene	0.14	U	1.0	0.14	ug/L			03/20/18 09:51	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/20/18 09:51	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/20/18 09:51	1
Xylenes, Total	0.27	U	3.0	0.27	ug/L			03/20/18 09:51	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
<i>Isopropyl alcohol</i>	73	T	ug/L		6.01	67-63-0		03/20/18 09:51	1
<i>Tentatively Identified Compound</i>	None		ug/L					03/20/18 09:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>1,2-Dichloroethane-d4 (Surr)</i>	84		75 - 129		03/20/18 09:51	1
<i>4-Bromofluorobenzene (Surr)</i>	103		81 - 130		03/20/18 09:51	1
<i>Dibromofluoromethane (Surr)</i>	89		81 - 124		03/20/18 09:51	1
<i>Toluene-d8 (Surr)</i>	103		87 - 128		03/20/18 09:51	1

Method: 6010C - Metals (ICP)

Client Sample ID: B3HJ03
Date Collected: 03/14/18 09:22
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	33600		1000	300	ug/L		03/16/18 12:19	03/21/18 17:06	1
Iron	30.0	U	100	30.0	ug/L		03/16/18 12:19	03/21/18 17:06	1
Magnesium	7580		1000	300	ug/L		03/16/18 12:19	03/21/18 17:06	1
Potassium	3680	B	5000	1500	ug/L		03/16/18 12:19	03/21/18 17:06	1
Sodium	11900		1000	300	ug/L		03/16/18 12:19	03/21/18 17:06	1
Vanadium	8.0	B	50.0	4.0	ug/L		03/16/18 12:19	03/21/18 17:06	1
Boron	25.0	U	100	25.0	ug/L		03/16/18 12:19	03/21/18 17:06	1

04/13/2018
Client Sample Results

REV.0

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

Method: 6010C - Metals (ICP) - Dissolved

Client Sample ID: B3HJ06
Date Collected: 03/14/18 09:22
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	100	25.0	ug/L		03/16/18 12:19	03/21/18 16:49	1
Calcium	34600		1000	300	ug/L		03/16/18 12:19	03/21/18 16:49	1
Iron	30.0	U	100	30.0	ug/L		03/16/18 12:19	03/21/18 16:49	1
Magnesium	7750		1000	300	ug/L		03/16/18 12:19	03/21/18 16:49	1
Potassium	3800	B	5000	1500	ug/L		03/16/18 12:19	03/21/18 16:49	1
Sodium	12300		1000	300	ug/L		03/16/18 12:19	03/21/18 16:49	1
Vanadium	10.1	B	50.0	4.0	ug/L		03/16/18 12:19	03/21/18 16:49	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B3HHW2
Date Collected: 03/14/18 11:26
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	95.5	D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:19	2

Client Sample ID: B3HFJ9
Date Collected: 03/14/18 08:21
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	4.0	U D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:26	2

Client Sample ID: B3HH72
Date Collected: 03/14/18 10:15
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	8.0	B D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:46	2

Client Sample ID: B3HJ03
Date Collected: 03/14/18 09:22
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	17.7	D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 21:40	2

Client Sample ID: B3HFL6
Date Collected: 03/14/18 08:55
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-16
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	10.2	D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 21:53	2

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

Client Sample ID: B3HHW4
Date Collected: 03/14/18 11:26
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	60.8	D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:12	2

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04/13/2018
Client Sample Results

REV.0

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

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

Client Sample ID: B3HFK2
Date Collected: 03/14/18 08:21
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	4.0	U D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:33	2

Client Sample ID: B3HH75
Date Collected: 03/14/18 10:15
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	7.9	B D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:39	2

Client Sample ID: B3HJ06
Date Collected: 03/14/18 09:22
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	19.2	D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 20:53	2

Client Sample ID: B3HFL9
Date Collected: 03/14/18 08:55
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-15
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	9.8	B D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 21:46	2

General Chemistry

Client Sample ID: B3HJN0
Date Collected: 03/14/18 07:40
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	2.0	B	5.0	0.54	mg/L			03/22/18 21:12	1

Client Sample ID: B3HJN1
Date Collected: 03/14/18 09:13
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	90.0		5.0	0.54	mg/L			03/22/18 21:24	1

Client Sample ID: B3HJ03
Date Collected: 03/14/18 09:22
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	110		5.0	0.54	mg/L			03/22/18 21:36	1
Bicarbonate Alkalinity	110		5.0	0.54	mg/L			03/22/18 21:36	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			03/22/18 21:36	1
Hydroxide Alkalinity	0.54	U	5.0	0.54	mg/L			03/22/18 21:36	1

TestAmerica St. Louis

04/13/2018
Client Sample Results

REV.0

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 906.0 - Tritium, Total (LSC)

Client Sample ID: B3HL14
Date Collected: 03/14/18 12:01
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	13800		673	1390	500	273	pCi/L	03/19/18 14:03	03/20/18 06:03	1

Client Sample ID: B3HLR3
Date Collected: 03/14/18 08:54
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	54.1	U	178	178	500	307	pCi/L	03/19/18 14:03	03/20/18 16:58	1

Client Sample ID: B3HHW2
Date Collected: 03/14/18 11:26
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	5850		447	682	500	268	pCi/L	03/19/18 14:03	03/20/18 06:45	1

Client Sample ID: B3HLV4
Date Collected: 03/14/18 14:26
Date Received: 03/16/18 09:00

Lab Sample ID: 160-27367-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	110	U	159	160	500	267	pCi/L	03/19/18 14:03	03/20/18 07:05	1

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Client Sample ID: B3HL13
Date Collected: 03/14/18 10:56
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-5.5	U	3.48	3.52	15.0	9.57	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Cobalt-60	4.76	U	3.07	3.10		6.72	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Antimony-125	2.65	U	4.39	4.40		20.8	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Cesium-134	8.10	U	4.19	4.27		16.0	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Europium-152	3.05	U	5.69	5.70		44.0	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Europium-154	17.0	U	28.9	28.9		76.5	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Europium-155	6.20	U	30.1	30.1		50.1	pCi/L	03/19/18 11:00	04/03/18 09:19	1
Potassium-40	-41	U	82.9	83.0		123	pCi/L	03/19/18 11:00	04/03/18 09:19	1

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Client Sample ID: B3HL45
Date Collected: 03/15/18 09:01
Date Received: 03/16/18 09:00

Lab Sample ID: 160-27367-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-2.5	U	9.60	9.60	15.0	10.8	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Cobalt-60	5.01	U	6.12	6.14		6.72	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Antimony-125	-2.3	U	22.1	22.1		23.5	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Cesium-134	-1.7	U	2.86	2.86		20.0	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Europium-152	1.70	U	6.67	6.67		49.7	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Europium-154	7.38	U	12.8	12.8		60.8	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Europium-155	0.000	U	4.11	4.11		53.4	pCi/L	03/19/18 11:00	03/26/18 20:38	1
Potassium-40	25.2	U	104	104		135	pCi/L	03/19/18 11:00	03/26/18 20:38	1

Method: SR-03-RC - Total Beta Strontium (GFPC)

Client Sample ID: B3HJ43
Date Collected: 03/14/18 10:56
Date Received: 03/15/18 09:20

Lab Sample ID: 160-27351-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.0045	U	0.0734	0.0734	2.00	0.133	pCi/L	04/02/18 18:21	04/08/18 17:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.9		40 - 110					04/02/18 18:21	04/08/18 17:38	1

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 160-356505/7
Matrix: Water
Analysis Batch: 356505

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.17	U	1.0	0.17	ug/L			03/20/18 09:26	1
1,1,2-Trichloroethane	0.13	U	1.0	0.13	ug/L			03/20/18 09:26	1
1,1-Dichloroethane	0.070	U	1.0	0.070	ug/L			03/20/18 09:26	1
1,1-Dichloroethene	0.10	U	1.0	0.10	ug/L			03/20/18 09:26	1
1,2-Dichloroethane	0.22	U	1.0	0.22	ug/L			03/20/18 09:26	1
2-Butanone (MEK)	0.47	U	5.0	0.47	ug/L			03/20/18 09:26	1
4-Methyl-2-pentanone (MIBK)	0.22	U	5.0	0.22	ug/L			03/20/18 09:26	1
Acetone	0.55	U	2.0	0.55	ug/L			03/20/18 09:26	1
Benzene	0.10	U	1.0	0.10	ug/L			03/20/18 09:26	1
Carbon disulfide	0.10	U	1.0	0.10	ug/L			03/20/18 09:26	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/20/18 09:26	1
Chlorobenzene	0.11	U	1.0	0.11	ug/L			03/20/18 09:26	1
Chloroform	0.10	U	1.0	0.10	ug/L			03/20/18 09:26	1
Ethylbenzene	0.12	U	1.0	0.12	ug/L			03/20/18 09:26	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			03/20/18 09:26	1
Tetrachloroethene	0.18	U	1.0	0.18	ug/L			03/20/18 09:26	1
Toluene	0.14	U	1.0	0.14	ug/L			03/20/18 09:26	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/20/18 09:26	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/20/18 09:26	1
Xylenes, Total	0.27	U	3.0	0.27	ug/L			03/20/18 09:26	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isobutyl alcohol	15.5	J	ug/L		8.59	78-83-1		03/20/18 09:26	1
n-Butyl acetate	0.426	J	ug/L		11.26	123-86-4		03/20/18 09:26	1
n-Nonyl Aldehyde	0.929	J	ug/L		15.03	124-19-6		03/20/18 09:26	1
Tentatively Identified Compound	None		ug/L					03/20/18 09:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 129		03/20/18 09:26	1
4-Bromofluorobenzene (Surr)	113		81 - 130		03/20/18 09:26	1
Dibromofluoromethane (Surr)	90		81 - 124		03/20/18 09:26	1
Toluene-d8 (Surr)	105		87 - 128		03/20/18 09:26	1

Lab Sample ID: LCS 160-356505/4
Matrix: Water
Analysis Batch: 356505

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.33		ug/L		93	85 - 116
1,1,2-Trichloroethane	10.0	9.19		ug/L		92	80 - 120
1,1-Dichloroethane	10.0	9.25		ug/L		93	80 - 120
1,1-Dichloroethene	10.0	9.47		ug/L		95	80 - 120
1,2-Dichloroethane	10.0	8.82		ug/L		88	80 - 115
2-Butanone (MEK)	10.0	8.29		ug/L		83	67 - 127
4-Methyl-2-pentanone (MIBK)	10.0	9.15		ug/L		92	75 - 126
Acetone	10.0	8.99		ug/L		90	69 - 129
Benzene	10.0	9.35		ug/L		94	80 - 120

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-356505/4
Matrix: Water
Analysis Batch: 356505

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon disulfide	10.0	9.92		ug/L		99	80 - 121
Carbon tetrachloride	10.0	10.0		ug/L		100	83 - 125
Chlorobenzene	10.0	9.79		ug/L		98	80 - 120
Chloroform	10.0	9.20		ug/L		92	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
Methylene Chloride	10.0	9.22		ug/L		92	80 - 120
Tetrachloroethene	10.0	9.54		ug/L		95	83 - 123
Toluene	10.0	9.97		ug/L		100	80 - 120
Trichloroethene	10.0	9.28		ug/L		93	80 - 120
Vinyl chloride	10.0	10.0		ug/L		100	77 - 122
Xylenes, Total	20.0	20.4		ug/L		102	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		75 - 129
4-Bromofluorobenzene (Surr)	93		81 - 130
Dibromofluoromethane (Surr)	97		81 - 124
Toluene-d8 (Surr)	103		87 - 128

Lab Sample ID: LCSD 160-356505/5
Matrix: Water
Analysis Batch: 356505

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	10.0	9.43		ug/L		94	85 - 116	1	20
1,1,2-Trichloroethane	10.0	9.13		ug/L		91	80 - 120	1	20
1,1-Dichloroethane	10.0	9.30		ug/L		93	80 - 120	0	20
1,1-Dichloroethene	10.0	9.35		ug/L		94	80 - 120	1	20
1,2-Dichloroethane	10.0	8.90		ug/L		89	80 - 115	1	20
2-Butanone (MEK)	10.0	8.43		ug/L		84	67 - 127	2	20
4-Methyl-2-pentanone (MIBK)	10.0	9.39		ug/L		94	75 - 126	3	20
Acetone	10.0	8.29		ug/L		83	69 - 129	8	20
Benzene	10.0	9.45		ug/L		95	80 - 120	1	20
Carbon disulfide	10.0	9.92		ug/L		99	80 - 121	0	20
Carbon tetrachloride	10.0	9.96		ug/L		100	83 - 125	1	20
Chlorobenzene	10.0	9.42		ug/L		94	80 - 120	4	20
Chloroform	10.0	9.40		ug/L		94	80 - 120	2	20
Ethylbenzene	10.0	9.84		ug/L		98	80 - 120	3	20
Methylene Chloride	10.0	9.24		ug/L		92	80 - 120	0	20
Tetrachloroethene	10.0	9.46		ug/L		95	83 - 123	1	20
Toluene	10.0	9.65		ug/L		96	80 - 120	3	20
Trichloroethene	10.0	9.31		ug/L		93	80 - 120	0	20
Vinyl chloride	10.0	9.94		ug/L		99	77 - 122	1	20
Xylenes, Total	20.0	19.6		ug/L		98	80 - 120	4	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		75 - 129
4-Bromofluorobenzene (Surr)	91		81 - 130

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-356505/5
Matrix: Water
Analysis Batch: 356505

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

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
Dibromofluoromethane (Surr)	92		81 - 124
Toluene-d8 (Surr)	98		87 - 128

Lab Sample ID: 160-27366-1 MS
Matrix: Water
Analysis Batch: 356505

Client Sample ID: B3HLC5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	0.17	U	10.0	9.53		ug/L		95	82 - 124
1,1,2-Trichloroethane	0.13	U	10.0	9.01		ug/L		90	80 - 120
1,1-Dichloroethane	0.070	U	10.0	9.25		ug/L		93	80 - 122
1,1-Dichloroethene	0.10	U	10.0	9.36		ug/L		94	80 - 120
1,2-Dichloroethane	0.22	U	10.0	8.78		ug/L		88	80 - 120
2-Butanone (MEK)	0.47	U	10.0	7.93		ug/L		79	53 - 145
4-Methyl-2-pentanone (MIBK)	0.22	U	10.0	8.56		ug/L		86	70 - 131
Acetone	4.7		10.0	12.6		ug/L		79	50 - 137
Benzene	0.10	U	10.0	9.54		ug/L		95	80 - 120
Carbon disulfide	0.10	U	10.0	9.83		ug/L		98	80 - 121
Carbon tetrachloride	0.18	U	10.0	10.1		ug/L		101	77 - 131
Chlorobenzene	0.11	U	10.0	9.53		ug/L		95	80 - 120
Chloroform	0.10	U	10.0	9.30		ug/L		93	80 - 120
Ethylbenzene	0.12	U	10.0	9.88		ug/L		99	84 - 125
Methylene Chloride	1.5		10.0	10.6		ug/L		91	80 - 120
Tetrachloroethene	0.18	U	10.0	9.43		ug/L		94	80 - 126
Toluene	0.14	U	10.0	9.74		ug/L		97	85 - 123
Trichloroethene	0.25	U	10.0	9.33		ug/L		93	81 - 125
Vinyl chloride	0.19	U	10.0	9.62		ug/L		96	70 - 129
Xylenes, Total	0.27	U	20.0	20.0		ug/L		100	80 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		75 - 129
4-Bromofluorobenzene (Surr)	87		81 - 130
Dibromofluoromethane (Surr)	94		81 - 124
Toluene-d8 (Surr)	99		87 - 128

Lab Sample ID: 160-27366-1 MSD
Matrix: Water
Analysis Batch: 356505

Client Sample ID: B3HLC5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	0.17	U	10.0	9.51		ug/L		95	82 - 124	0	20
1,1,2-Trichloroethane	0.13	U	10.0	8.76		ug/L		88	80 - 120	3	20
1,1-Dichloroethane	0.070	U	10.0	9.20		ug/L		92	80 - 122	1	20
1,1-Dichloroethene	0.10	U	10.0	9.39		ug/L		94	80 - 120	0	20
1,2-Dichloroethane	0.22	U	10.0	8.51		ug/L		85	80 - 120	3	20
2-Butanone (MEK)	0.47	U	10.0	7.86		ug/L		79	53 - 145	1	20
4-Methyl-2-pentanone (MIBK)	0.22	U	10.0	8.59		ug/L		86	70 - 131	0	20
Acetone	4.7		10.0	11.0		ug/L		63	50 - 137	14	20

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 160-27366-1 MSD
Matrix: Water
Analysis Batch: 356505

Client Sample ID: B3HLC5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.10	U	10.0	9.53		ug/L		95	80 - 120	0	20
Carbon disulfide	0.10	U	10.0	9.74		ug/L		97	80 - 121	1	20
Carbon tetrachloride	0.18	U	10.0	9.96		ug/L		100	77 - 131	1	20
Chlorobenzene	0.11	U	10.0	9.45		ug/L		95	80 - 120	1	20
Chloroform	0.10	U	10.0	9.16		ug/L		92	80 - 120	1	20
Ethylbenzene	0.12	U	10.0	9.89		ug/L		99	84 - 125	0	20
Methylene Chloride	1.5		10.0	10.4		ug/L		89	80 - 120	1	20
Tetrachloroethene	0.18	U	10.0	9.29		ug/L		93	80 - 126	1	20
Toluene	0.14	U	10.0	9.65		ug/L		97	85 - 123	1	20
Trichloroethene	0.25	U	10.0	9.32		ug/L		93	81 - 125	0	20
Vinyl chloride	0.19	U	10.0	9.95		ug/L		99	70 - 129	3	20
Xylenes, Total	0.27	U	20.0	19.9		ug/L		100	80 - 120	0	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	87		75 - 129
4-Bromofluorobenzene (Surr)	87		81 - 130
Dibromofluoromethane (Surr)	93		81 - 124
Toluene-d8 (Surr)	98		87 - 128

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-356151/1-A
Matrix: Water
Analysis Batch: 356994

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 356151

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	300	U	1000	300	ug/L		03/16/18 12:19	03/21/18 16:40	1
Iron	30.0	U	100	30.0	ug/L		03/16/18 12:19	03/21/18 16:40	1
Magnesium	300	U	1000	300	ug/L		03/16/18 12:19	03/21/18 16:40	1
Potassium	1500	U	5000	1500	ug/L		03/16/18 12:19	03/21/18 16:40	1
Sodium	300	U	1000	300	ug/L		03/16/18 12:19	03/21/18 16:40	1
Boron	25.0	U	100	25.0	ug/L		03/16/18 12:19	03/21/18 16:40	1
Vanadium	4.0	U	50.0	4.0	ug/L		03/16/18 12:19	03/21/18 16:40	1

Lab Sample ID: LCS 160-356151/2-A
Matrix: Water
Analysis Batch: 356994

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 356151

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10000	9221		ug/L		92	80 - 120
Iron	10000	8957		ug/L		90	80 - 120
Magnesium	10000	8653		ug/L		87	80 - 120
Potassium	10000	8786		ug/L		88	80 - 120
Sodium	10000	8838		ug/L		88	80 - 120
Boron	200	177.2		ug/L		89	80 - 120
Vanadium	1000	877.6		ug/L		88	80 - 120

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 160-27351-13 MS
Matrix: Water
Analysis Batch: 356994

Client Sample ID: B3HJ06
Prep Type: Dissolved
Prep Batch: 356151

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Calcium	34600		10000	43810		ug/L		92	75 - 125
Iron	30.0	U	10000	9150		ug/L		92	75 - 125
Magnesium	7750		10000	16560		ug/L		88	75 - 125
Potassium	3800	B	10000	12870		ug/L		91	75 - 125
Sodium	12300		10000	21430		ug/L		91	75 - 125
Boron	25.0	U	200	194.1		ug/L		97	75 - 125
Vanadium	10.1	B	1000	917.7		ug/L		91	75 - 125

Lab Sample ID: 160-27351-13 MSD
Matrix: Water
Analysis Batch: 356994

Client Sample ID: B3HJ06
Prep Type: Dissolved
Prep Batch: 356151

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Calcium	34600		10000	42880		ug/L		82	75 - 125	2	20
Iron	30.0	U	10000	9017		ug/L		90	75 - 125	1	20
Magnesium	7750		10000	16460		ug/L		87	75 - 125	1	20
Potassium	3800	B	10000	12680		ug/L		89	75 - 125	1	20
Sodium	12300		10000	20990		ug/L		87	75 - 125	2	20
Boron	25.0	U	200	189.2		ug/L		95	75 - 125	3	20
Vanadium	10.1	B	1000	889.4		ug/L		88	75 - 125	3	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 160-356149/1-A
Matrix: Water
Analysis Batch: 356991

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 356149

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	4.0	U D	10.0	4.0	ug/L		03/16/18 12:16	03/21/18 19:59	2

Lab Sample ID: LCS 160-356149/2-A
Matrix: Water
Analysis Batch: 356991

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 356149

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chromium	1000	983.6	D	ug/L		98	80 - 120

Lab Sample ID: 160-27351-13 MS
Matrix: Water
Analysis Batch: 356991

Client Sample ID: B3HJ06
Prep Type: Dissolved
Prep Batch: 356149

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Chromium	19.2	D	1000	1012	D	ug/L		99	75 - 125

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

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

Lab Sample ID: 160-27351-13 MSD
 Matrix: Water
 Analysis Batch: 356991

Client Sample ID: B3HJ06
 Prep Type: Dissolved
 Prep Batch: 356149

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	19.2	D	1000	998.4	D	ug/L		98	75 - 125	1	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-356985/1
 Matrix: Water
 Analysis Batch: 356985

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	0.54	U	5.0	0.54	mg/L			03/22/18 19:27	1
Bicarbonate Alkalinity	0.54	U	5.0	0.54	mg/L			03/22/18 19:27	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			03/22/18 19:27	1
Hydroxide Alkalinity	0.54	U	5.0	0.54	mg/L			03/22/18 19:27	1

Lab Sample ID: HLCS 160-356985/3
 Matrix: Water
 Analysis Batch: 356985

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

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	400	386.0		mg/L		96	90 - 110
Bicarbonate Alkalinity	400	386.0		mg/L		96	90 - 110

Lab Sample ID: LCS 160-356985/2
 Matrix: Water
 Analysis Batch: 356985

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	192.0		mg/L		96	90 - 110
Bicarbonate Alkalinity	200	192.0		mg/L		96	90 - 110

Lab Sample ID: 160-27318-A-13 MS
 Matrix: Water
 Analysis Batch: 356985

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
Alkalinity	96.0		100	194.0		mg/L		98	80 - 120
Bicarbonate Alkalinity	96.0		100	194.0		mg/L		98	80 - 120

Lab Sample ID: 160-27318-A-13 DU
 Matrix: Water
 Analysis Batch: 356985

Client Sample ID: Duplicate
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	96.0		94.00		mg/L		2	20
Bicarbonate Alkalinity	96.0		94.00		mg/L		2	20
Carbonate Alkalinity	0.54	U	0.54	U	mg/L		NC	20
Hydroxide Alkalinity	0.54	U	0.54	U	mg/L		NC	20

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-356463/1-A
Matrix: Water
Analysis Batch: 356721

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 356463

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	128.4	U	165	165	500	276	pCi/L	03/19/18 14:03	03/20/18 01:12	1

Lab Sample ID: LCS 160-356463/2-A
Matrix: Water
Analysis Batch: 356721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 356463

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2770	2453		374	500	259	pCi/L	88	80 - 120

Lab Sample ID: 160-27067-A-2-C MS
Matrix: Water
Analysis Batch: 356721

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 356463

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2090		2770	4457		559	500	269	pCi/L	86	75 - 125

Lab Sample ID: 160-27067-A-1-C DU
Matrix: Water
Analysis Batch: 356721

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 356463

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Tritium	1010		862.6		230	500	261	pCi/L	15	20

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-356426/1-A
Matrix: Water
Analysis Batch: 357466

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 356426

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.542	U	6.61	6.62	15.0	11.1	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Cobalt-60	-1.34	U	8.69	8.69		9.78	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Antimony-125	0.000	U	4.95	4.95		18.8	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Cesium-134	2.657	U	4.55	4.56		17.0	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Europium-152	5.437	U	19.8	19.8		31.5	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Europium-154	30.36	U	37.2	37.3		73.3	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Europium-155	-0.934	U	25.8	25.8		29.5	pCi/L	03/19/18 11:00	03/26/18 17:59	1
Potassium-40	10.88	U	67.3	67.3		114	pCi/L	03/19/18 11:00	03/26/18 17:59	1

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: LCS 160-356426/2-A
Matrix: Water
Analysis Batch: 357464

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 356426

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	134800		15600		315	pCi/L	99	80 - 120
Cesium-137	45800	44400		4450	15.0	87.9	pCi/L	97	80 - 120
Cobalt-60	34400	33140		3280		70.1	pCi/L	96	80 - 120

Lab Sample ID: 160-27351-1 DU
Matrix: Water
Analysis Batch: 358375

Client Sample ID: B3HL13
Prep Type: Total/NA
Prep Batch: 356426

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Cesium-137	-5.5	U	2.771	U y	4.94	15.0	8.36	pCi/L	608	30
Cobalt-60	4.76	U	2.999	U y	5.39		6.21	pCi/L	45	30
Antimony-125	2.65	U	13.12	U y	16.2		14.9	pCi/L	133	30
Cesium-134	8.10	U	0.887	U y	6.21		17.6	pCi/L	161	30
Europium-152	3.05	U	18.44	U y	9.64		38.1	pCi/L	143	30
Europium-154	17.0	U	18.60	U	40.8		96.7	pCi/L	9	30
Europium-155	6.20	U	7.156	U	17.5		29.3	pCi/L	14	30
Potassium-40	-41	U	21.89	U y	58.5		92.5	pCi/L	652	30

Method: SR-03-RC - Total Beta Strontium (GFPC)

Lab Sample ID: MB 160-358545/8-A
Matrix: Water
Analysis Batch: 359580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 358545

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0804	U	0.0965	0.0967	2.00	0.159	pCi/L	04/02/18 18:21	04/08/18 17:39	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.8		40 - 110					04/02/18 18:21	04/08/18 17:39	1

Lab Sample ID: LCS 160-358545/1-A
Matrix: Water
Analysis Batch: 359580

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 358545

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium 89/90	8.28	7.929		0.657	2.00	0.133	pCi/L	96	80 - 120
Carrier	LCS %Yield	LCS Qualifier	Limits						
Sr Carrier	85.3		40 - 110						

Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

Method: SR-03-RC - Total Beta Strontium (GFPC) (Continued)

Lab Sample ID: LCSD 160-358545/2-A
Matrix: Water
Analysis Batch: 359580

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 358545

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Strontium 89/90	8.28	7.947		0.660	2.00	0.131	pCi/L	96	80 - 120	0	20
Carrier		LCSD %Yield	LCSD Qualifier								Limits
Sr Carrier		85.4									40 - 110

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Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

GC/MS VOA

Analysis Batch: 356505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27366-1	B3HLC5	Total/NA	Water	8260C	
MB 160-356505/7	Method Blank	Total/NA	Water	8260C	
LCS 160-356505/4	Lab Control Sample	Total/NA	Water	8260C	
LCS 160-356505/5	Lab Control Sample Dup	Total/NA	Water	8260C	
160-27366-1 MS	B3HLC5	Total/NA	Water	8260C	
160-27366-1 MSD	B3HLC5	Total/NA	Water	8260C	

Metals

Prep Batch: 356149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-7	B3HHW4	Dissolved	Water	3010A	
160-27351-8	B3HHW2	Total/NA	Water	3010A	
160-27351-9	B3HFJ9	Total/NA	Water	3010A	
160-27351-10	B3HFK2	Dissolved	Water	3010A	
160-27351-11	B3HH75	Dissolved	Water	3010A	
160-27351-12	B3HH72	Total/NA	Water	3010A	
160-27351-13	B3HJ06	Dissolved	Water	3010A	
160-27351-14	B3HJ03	Total/NA	Water	3010A	
160-27351-15	B3HFL9	Dissolved	Water	3010A	
160-27351-16	B3HFL6	Total/NA	Water	3010A	
MB 160-356149/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-356149/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-27351-13 MS	B3HJ06	Dissolved	Water	3010A	
160-27351-13 MSD	B3HJ06	Dissolved	Water	3010A	

Prep Batch: 356151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-13	B3HJ06	Dissolved	Water	3010A	
160-27351-14	B3HJ03	Total/NA	Water	3010A	
MB 160-356151/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-356151/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-27351-13 MS	B3HJ06	Dissolved	Water	3010A	
160-27351-13 MSD	B3HJ06	Dissolved	Water	3010A	

Analysis Batch: 356991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-7	B3HHW4	Dissolved	Water	6020A	356149
160-27351-8	B3HHW2	Total/NA	Water	6020A	356149
160-27351-9	B3HFJ9	Total/NA	Water	6020A	356149
160-27351-10	B3HFK2	Dissolved	Water	6020A	356149
160-27351-11	B3HH75	Dissolved	Water	6020A	356149
160-27351-12	B3HH72	Total/NA	Water	6020A	356149
160-27351-13	B3HJ06	Dissolved	Water	6020A	356149
160-27351-14	B3HJ03	Total/NA	Water	6020A	356149
160-27351-15	B3HFL9	Dissolved	Water	6020A	356149
160-27351-16	B3HFL6	Total/NA	Water	6020A	356149
MB 160-356149/1-A	Method Blank	Total/NA	Water	6020A	356149
LCS 160-356149/2-A	Lab Control Sample	Total/NA	Water	6020A	356149
160-27351-13 MS	B3HJ06	Dissolved	Water	6020A	356149

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Metals (Continued)

Analysis Batch: 356991 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-13 MSD	B3HJ06	Dissolved	Water	6020A	356149

Analysis Batch: 356994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-13	B3HJ06	Dissolved	Water	6010C	356151
160-27351-14	B3HJ03	Total/NA	Water	6010C	356151
MB 160-356151/1-A	Method Blank	Total/NA	Water	6010C	356151
LCS 160-356151/2-A	Lab Control Sample	Total/NA	Water	6010C	356151
160-27351-13 MS	B3HJ06	Dissolved	Water	6010C	356151
160-27351-13 MSD	B3HJ06	Dissolved	Water	6010C	356151

General Chemistry

Analysis Batch: 356985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-4	B3HJN0	Total/NA	Water	310.1	
160-27351-5	B3HJN1	Total/NA	Water	310.1	
160-27351-14	B3HJ03	Total/NA	Water	310.1	
MB 160-356985/1	Method Blank	Total/NA	Water	310.1	
HLCS 160-356985/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-356985/2	Lab Control Sample	Total/NA	Water	310.1	
160-27318-A-13 MS	Matrix Spike	Total/NA	Water	310.1	
160-27318-A-13 DU	Duplicate	Total/NA	Water	310.1	

Rad

Prep Batch: 356426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-1	B3HL13	Total/NA	Water	Fill_Geo-0	
160-27367-1	B3HL45	Total/NA	Water	Fill_Geo-0	
MB 160-356426/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-356426/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
160-27351-1 DU	B3HL13	Total/NA	Water	Fill_Geo-0	

Prep Batch: 356463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-2	B3HL14	Total/NA	Water	LSC_Dist_Susp	
160-27351-3	B3HLR3	Total/NA	Water	LSC_Dist_Susp	
160-27351-8	B3HHW2	Total/NA	Water	LSC_Dist_Susp	
160-27367-2	B3HLV4	Total/NA	Water	LSC_Dist_Susp	
MB 160-356463/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-356463/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-27067-A-2-C MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-27067-A-1-C DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 358545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27351-6	B3HJ43	Total/NA	Water	PrecSep_0	
MB 160-358545/8-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-358545/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

04/13/2018
QC Association Summary

REV.0

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Rad (Continued)

Prep Batch: 358545 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 160-358545/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

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Client: CH2M Hill Plateau Remediation Company
 Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
 SDG: SL2825

Method: 8260C - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA	BFB	DBFM	TOL
		(75-129)	(81-130)	(81-124)	(87-128)
160-27366-1	B3HLC5	84	103	89	103
160-27366-1 MS	B3HLC5	88	87	94	99
160-27366-1 MSD	B3HLC5	87	87	93	98
LCS 160-356505/4	Lab Control Sample	94	93	97	103
LCSD 160-356505/5	Lab Control Sample Dup	91	91	92	98
MB 160-356505/7	Method Blank	91	113	90	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 DBFM = Dibromofluoromethane (Surr)
 TOL = Toluene-d8 (Surr)



04/13/2018
Tracer/Carrier Summary

REV.0

Client: CH2M Hill Plateau Remediation Company
Project/Site: I18-006 / S18-003 / W18-003 / X18-005

TestAmerica Job ID: 160-27351-1
SDG: SL2825

Method: SR-03-RC - Total Beta Strontium (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	
160-27351-6	B3HJ43	84.9	
LCS 160-358545/1-A	Lab Control Sample	85.3	
LCSD 160-358545/2-A	Lab Control Sample Dup	85.4	
MB 160-358545/8-A	Method Blank	82.8	

Tracer/Carrier Legend
Sr Carrier = Sr Carrier

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