

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: 160-23370-2

TestAmerica Sample Delivery Group: SL2590A
Client Project/Site: F17-009

For:

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
3/2/2018 2:53:01 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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SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0665
		Rev. Number: 0
		Date Initiated: 05/07/2018
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F17-009	
LABORATORY:	TASL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE NUMBERS:	B3BMP7	
SAMPLE MATRIX:	SOIL	
SDG NUM(S):	SL2590	
<u>ISSUE BACKGROUND</u>		
CLASS:	Chain of Custody Issue (Field)	
TYPE:	No Sample Collector Listed on COC	
DESCRIPTION:	COC-F17-009-655, there is a missing name in the Collector box.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	DOCUMENT AND CLOSE	
FINAL RESOLUTION:	DOCUMENT AND CLOSE	
SUBMITTED BY:		
KESSINGER, AL	_____	05/07/2018 _____
ACCEPTED BY:		
HEY, BE	_____	05/07/2018 _____

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Job ID: 160-23370-2

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
March 1, 2018
Attention: Scot Fitzgerald

SDG : SL2590A
Number of Samples : 3 samples
Sample Matrix : Soil
Data Deliverable : Summary
Date SDG Closed : July 18, 2017

II. Introduction

Per SIR18-0488, it was determined that pH analysis needed to be added to the samples in this SDG. It is acknowledged per the SIR that the method will be run outside of hold time and temperature criteria.

Per SIR18-0506, it was determined that 6010 Metals analysis needed to be added to the samples in this SDG. It is acknowledged per the client that samples may be run outside of hold time due to length of time since original sampling date.

The following SAFs are associated with this SDG: F17-009

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.

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Job ID: 160-23370-2 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

IV. Definitions

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

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

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

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte 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.

ICP Metals

Batch: 352190

The following samples were analyzed outside of hold time due to request for analysis coming after hold expired. B3BMR4 (160-23370-6) and B3BMN1 (160-23370-8)

Due to the high concentration of Aluminum, Calcium, Iron and Magnesium, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-351868 and analytical batch 160-352190 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. (160-23370-D-6-H MS ^) and (160-23370-D-6-I MSD) These analytes have been qualified with an "X" flag in the associated samples.

The following samples were diluted to bring the concentration of target analytes within the calibration range: B3BMR4 (160-23370-6), B3BMN1 (160-23370-8), (160-23370-D-6-H MS ^), (160-23370-D-6-I MSD) and (160-23370-D-6-G SD ^). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

Batch: 352537

The following samples were analyzed outside of hold time due to request for analysis coming after hold expired. B3BMR4 (160-23370-6) and B3BMN1 (160-23370-8)

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Job ID: 160-23370-2 (Continued)**Laboratory: TestAmerica St. Louis (Continued)**

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 160-352205 and analytical batch 160-352537 were outside control limits for Silicon. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. (160-23370-D-6-K MS ^) and (160-23370-D-6-L MSD) This analyte has been qualified accordingly with an "N" flag in the associated samples.

The following samples were diluted to bring the concentration of target analytes within the calibration range: B3BMR4 (160-23370-6), B3BMN1 (160-23370-8), (160-23370-D-6-K MS ^), (160-23370-D-6-L MSD) and (160-23370-D-6-J SD ^). Elevated reporting limits (RLs) are provided.

pH**Batch: 352560**

pH analysis for the following samples in soil preparation batch 160-352555 and analytical batch 160-352560 was requested by the client after the holding time had expired: B3BMP2 (160-23370-3).

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

Reviewed and approved:

Jayna Awalt
St. Louis Project Manager

SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0488
		Rev. Number: 0
		Date Initiated: 02/15/2018
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F17-009	
LABORATORY:	TASL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	12	
SAMPLE NUMBERS:	B3BMP2, B3BMT5, B3BMV6, B3BMW7, B3D1H7, B3D1J3, B3D1L9, B3DCH1, B3DCJ6, B3DCK6, B3DCL1, B3DCM1	
SAMPLE MATRIX:	SOIL	
SDG NUM(S):	SL2590, SL2596, SL2607, SL2649, SL2658, SL2682, SL2697	
<u>ISSUE BACKGROUND</u>		
CLASS:	General Laboratory Direction	
TYPE:	Addition of Analyses	
DESCRIPTION:	The project has determined the need to run pH on the sample(s) listed above. It is acknowledged that the method will be run outside of hold time.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	Run pH as described above.	
FINAL RESOLUTION:	Accept proposed resolution	
SUBMITTED BY:		
FITZGERALD, SL	_____	02/15/2018
ACCEPTED BY:		
AWALT, JK	_____	02/15/2018

SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0506
		Rev. Number: 0
		Date Initiated: 02/26/2018
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F17-009	
LABORATORY:	TASL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	17	
SAMPLE NUMBERS:	B3BMN1, B3BMR4, B3BMV1, B3BMX4, B3D1H1, B3D1K6, B3D1L3, B3D1M6, B3DCJ1, B3DCK1, B3DCL6, B3DCM6, B3FC19, B3FCL4, B3FCM7, B3FLX1, B3FLX2	
SAMPLE MATRIX:	SOIL	
SDG NUM(S):	SL2590, SL2607, SL2612, SL2649, SL2658, SL2682, SL2697, SL2705, SL2732, SL2747	
<u>ISSUE BACKGROUND</u>		
CLASS:	General Laboratory Direction	
TYPE:	Addition of Analyses	
DESCRIPTION:	The project has determined the need to run 6010_METALS_ICP_WE: COMMON for: Aluminum, Potassium, Barium, Manganese, Calcium, Magnesium, Iron, Sodium, Chromium and Silicon on the samples listed above.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	Run metals analysis as described above.	
FINAL RESOLUTION:	Accept proposed resolution	
SUBMITTED BY:		
FITZGERALD, SL	02/26/2018	
ACCEPTED BY:		
AWALT, JK	02/26/2018	

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-23370-1

SDG Number: SL2590

Login Number: 23370

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	Ice Packs were included but were melted.
Cooler Temperature is acceptable.	False	
Cooler Temperature is recorded.	True	12.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	COC not relinquished by TA Richland.
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2Mhill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F17-009-638	PAGE 1 OF 1	
COLLECTOR <i>P. Brice</i> <i>9L2590</i>		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 3, B39LN6		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>NA</i>		FIELD LOGBOOK NO. <i>NA</i>	ACTUAL SAMPLE DEPTH <i>60.7-63.2</i>	COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>NA</i>		BILL OF LADING/AIR BILL NO. <i>NA</i>			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION				
			Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C
		HOLDING TIME	14/40 Days	14/40 Days	28 Days	28 Days
		TYPE OF CONTAINER	Gs	aG	G/P	G/P
		NO. OF CONTAINER(S)	1	1	1	1
		VOLUME	<i>120mL</i> <i>40Z</i>	<i>120mL</i> <i>40Z</i>	250mL	<i>60mL</i> <i>40Z</i>
SPECIAL HANDLING AND/OR STORAGE <i>NA</i>	SAMPLE ANALYSIS					
	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	WTPH_KEROSENE: COMMON; ✓	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	350.1_AMMONIUM: COMMON; ✓ 9012_CYANIDE: COMMON; ✓		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B3BMN0	SOIL	7/13/17	0930	X	X	X	X

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM <i>Jen Russell, Jen Russell</i> <i>7/13/17</i> <i>1400</i>	RECEIVED BY/STORED IN <i>Red Lee</i> <i>GTL Refrigerator</i> <i>7/13/17</i> <i>1400</i>	TRVL-17-175 (1) 8270_SVOA_GCMS: COMMON (Add-on) {Tributyl phosphate}; ✓ (2) 7471_MERCURY_CV: COMMON (SOLIDS); 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Uranium};
RELINQUISHED BY/REMOVED FROM <i>Rick</i> <i>7/14/17</i> <i>1410</i>	RECEIVED BY/STORED IN <i>Jen Russell, Jen Russell</i> <i>7/14/17</i> <i>1410</i>	
RELINQUISHED BY/REMOVED FROM <i>Jen Russell, Jen Russell</i> <i>7/14/17</i> <i>1620</i>	RECEIVED BY/STORED IN <i>A. Rogers, TARL</i> <i>7/14/17</i> <i>1620</i>	
RELINQUISHED BY/REMOVED FROM <i>FedEx</i> <i>7.18.17</i>	RECEIVED BY/STORED IN <i>FedEx</i> <i>Jill Clarke</i> <i>7.18.17</i> <i>0910</i>	
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	RECEIVED BY/STORED IN <i>Jill Clarke, Jill Clarke</i> <i>7.18.17</i> <i>0910</i>	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

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

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F17-009-645	PAGE 1 OF 1
COLLECTOR P. Brice 522590		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 4, B39LN8		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. NA		FIELD LOGBOOK NO. NA	ACTUAL SAMPLE DEPTH 65.3-68.8		COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION				Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C
		HOLDING TIME				14/40 Days	14/40 Days	28 Days	28 Days
		TYPE OF CONTAINER				Gs	aG	G/P	G/P
		NO. OF CONTAINER(S)				1 JR 7/13/17	1	1	1 JR 7/13/17
		VOLUME				120ml 4 oz	120mL	250mL	60ml 4 oz
SPECIAL HANDLING AND/OR STORAGE NA		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	WTPH_KEROSENE: COMMON;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	350.1_AMMONIUM: COMMON; 9012_CYANIDE: COMMON;		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B3BMN7	SOIL	7/13/17	1230	X	X	X	X

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM JR 7/13/17 Jen Russell, Jen Russell PBS 7/13/17 1500	RECEIVED BY/STORED IN GTL Refrigerator 7/13/17 1500	TRVL-17-175 (1) 8270_SVOA_GCMS: COMMON (Add-on) {Tributyl phosphate}; (2) 7471_MERCURY_CV: COMMON (SOLIDS); 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Uranium};
RELINQUISHED BY/REMOVED FROM JR 7/14/17 GTL Refrigerator 7/13/17 1410	RECEIVED BY/STORED IN Jen Russell, Jen Russell PBS 7/14/17 1410	
RELINQUISHED BY/REMOVED FROM Jen Russell, Jen Russell PBS 7/14/17 1620	RECEIVED BY/STORED IN A Rogers, TARI 7/14/17 1620	
RELINQUISHED BY/REMOVED FROM FEDEX 7.18.17	RECEIVED BY/STORED IN FedEx JILL CLARKE 7.18.17 0910	
RELINQUISHED BY/REMOVED FROM Fed Ex	RECEIVED BY/STORED IN Jill Clarke Jill Clark 7.18.17 0910	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

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

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F17-009-650	PAGE 1 OF 1
COLLECTOR P. Brice 8L2590		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 7, B39LP4		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. NA		FIELD LOGBOOK NO. NA	ACTUAL SAMPLE DEPTH 80.3-83.8		COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION				Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C
		HOLDING TIME				14/40 Days	14/40 Days	28 Days	28 Days
		TYPE OF CONTAINER				Gs	gG	G/P	G/P
		NO. OF CONTAINER(S)				1	1	1	1
		VOLUME				120ml 4oz 7/14/17 ACM	120mL	250mL	60ml 4oz 7/14/17 ACM
		SPECIAL HANDLING AND/OR STORAGE NA				SAMPLE ANALYSIS			

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CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Patrick Brice DATE/TIME 7/14/17 1550	RECEIVED BY/STORED IN Jan Russell DATE/TIME 7/14/17 1550	TRVL-17-175 (1) 8270_SVOA_GCMS: COMMON (Add-on) {Tributyl phosphate}; (2) 7471_MERCURY_CV: COMMON (SOLIDS); 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Uranium};
RELINQUISHED BY/REMOVED FROM Jan Russell DATE/TIME 7/14/17 1620	RECEIVED BY/STORED IN A. Rogers DATE/TIME 7/14/17 1620	
RELINQUISHED BY/REMOVED FROM FED EX DATE/TIME 7/18/17	RECEIVED BY/STORED IN Jill Clarke DATE/TIME 7/18/17 0910	
RELINQUISHED BY/REMOVED FROM Med Ex DATE/TIME	RECEIVED BY/STORED IN Jill Clarke DATE/TIME	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

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

PRINTED ON 6/28/2017

FSR ID = FSR47546

TRVL NUM = TRVL-17-175

A-6003-618 (REV 2)

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F17-009-655	PAGE 1 OF 1
COLLECTOR SL2590		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 7, B39LP4 DUP		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO.		FIELD LOGBOOK NO. NA	ACTUAL SAMPLE DEPTH 80.3-83.8		COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C
		HOLDING TIME	14/40 Days	14/40 Days	28 Days	28 Days
		TYPE OF CONTAINER	Gs	aG	G/P	G/P
		NO. OF CONTAINER(S)	1	1	1	1
		VOLUME	120ml 4oz	120mL	250mL	60ml 4oz
SPECIAL HANDLING AND/OR STORAGE NA		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	WTPH_KEROSENE: COMMON;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	350.L_AMMONIUM: COMMON; 9012_CYANIDE: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B3BMP7	SOIL	7/14/17	1045	X	X	X	X

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Patrick Brna Pat Brna PBS 7/14/17 1550	RECEIVED BY/STORED IN Jen Russell Jen Russell PBS 7/14/17 1550	TRVL-17-175 (1) 8270_SVOA_GCMS: COMMON (Add-on) {Tributyl phosphate}; (2) 7471_MERCURY_CV: COMMON (SOLIDS); 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Uranium};
RELINQUISHED BY/REMOVED FROM Jen Russell Jen Russell PBS 7/14/17 1620	RECEIVED BY/STORED IN A Rogers, TARL	
RELINQUISHED BY/REMOVED FROM FEDEREX 7/18/17	RECEIVED BY/STORED IN Jill Clarke Jill Clarke 7/18/17 0910	
RELINQUISHED BY/REMOVED FROM Fed Ex	RECEIVED BY/STORED IN Jill Clarke Jill Clarke 7/18/17 0910	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

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



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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F17-009-661	PAGE 1 OF 1
COLLECTOR <i>P. Brice</i> <i>SL 2590</i>		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 11, B39LR2		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>NA</i>		FIELD LOGBOOK NO. <i>NA</i>	ACTUAL SAMPLE DEPTH <i>102.0 - 104.0</i>		COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>NA</i>		BILL OF LADING/AIR BILL NO. <i>NA</i>			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION				Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C
		HOLDING TIME				14/40 Days	14/40 Days	28 Days	28 Days
		TYPE OF CONTAINER				Gs	aG	G/P	G/P
		NO. OF CONTAINER(S)				1	1	1	1
		VOLUME				<i>120ml TC</i> <i>4oz 7/14/17</i>	120mL	250mL	<i>60ml</i> <i>4oz 7/14/17 TC</i>
		SPECIAL HANDLING AND/OR STORAGE NA				SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	WTPH, KEROSENE; COMMON;
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B3BMR3	SOIL	7/14/17	1300	X	X	X	X		

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-17-175 (1) 8270_SVOA_GCMS: COMMON (Add-on) {Tributyl phosphate}; (2) 7471_MERCURY_CV: COMMON (SOLIDS); 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Uranium};	
<i>Patrick Brice</i>	<i>7/14/17 1550</i>	<i>Jan Russell</i>	<i>7/14/17 1550</i>		
<i>Jan Russell</i>	<i>7/14/17 1620</i>	<i>A. Rogers</i>	<i>7/14/17 1620</i>		
<i>FedEx</i>	<i>7-18-17</i>	<i>Jill Clarke</i>	<i>7-18-17</i>		
<i>Fed Ex</i>		<i>Jill Clarke</i>	<i>7-18-17</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

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



CH2Mhill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F17-009-662	PAGE 1 OF 1
COLLECTOR <i>P. Brice</i> 92-2590		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 11, B391.R2		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. NA		FIELD LOGBOOK NO. NA	ACTUAL SAMPLE DEPTH 102.0 - 104.0		COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION		Cool <=6C	None	Cool <=6C	None	Cool <=6C	Cool <=6C
		HOLDING TIME		28 Days	6 Months	28 Days	ASAP	28 Days	28 Days
		TYPE OF CONTAINER		aG	P	G/P	G/P	aG	aG
		NO. OF CONTAINER(S)		1	1	1	1	1	1
		VOLUME		120mL	60mL ^{7/14/17} 402	250mL	60mL ^{7/14/17} 402	120mL	120mL
		SPECIAL HANDLING AND/OR STORAGE NA		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS ✓	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B3BMR4	SOIL	7/14/17	1300	X	X	X	X	X	X

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-17-175; ** All Cations, TIC and TOC requesting Water Extraction (WE) shall use a 1:1 ratio. (1) 9060_TIC: COMMON {Total Inorganic Carbon}; 9060_TOC: COMMON {Total organic carbon}; ✓ (2) 6010_METALS_ICP_WE: COMMON {Aluminum, Barium, Calcium, Chromium, Iron, Magnesium, Manganese, Potassium, Silicon, Sodium}; ✓ (3) 9050_CONDUCTIVITY_WE: COMMON {Specific Conductance}; ✓ (4) 9045_pH (Non-Aqueous)_WE: COMMON {pH Measurement}; ✓
<i>Patrick Brice</i>	PBS 7/14/17 1550	<i>Jen Russell</i>	PBS 7/14/17 1550	
<i>Jen Russell</i>	PBS 7/14/17 1620	<i>A. Rogers</i>	TARL 7/14/17 1620	
<i>Fed Ex</i>	7/18/17	<i>Jill Clarke</i>	7/18/17 0910	

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

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F17-009-639	PAGE 1 OF 1	
COLLECTOR <i>P. Brice</i> <i>SL2590</i>		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9497, Core 3, B39LN6		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>NA</i>		FIELD LOGBOOK NO. <i>NA</i>	ACTUAL SAMPLE DEPTH <i>41.7-43.2</i>	COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL		
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>NA</i>	<i>60.7 - JE 7/13/17</i>	BILL OF LADING/AIR BILL NO. <i>NA</i>			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	Cool <=6C	None	Cool <=6C	None	Cool <=6C	Cool <=6C
		HOLDING TIME	28 Days	6 Months	28 Days	ASAP	28 Days	28 Days
		TYPE OF CONTAINER	aG	P	G/P	G/P	aG	aG
		NO. OF CONTAINER(S)	1	1	1	1	1	1
		VOLUME	120mL	60mL <i>4oz</i>	250mL	60mL <i>4oz</i>	120mL <i>4oz</i>	120mL <i>4oz</i>
		SPECIAL HANDLING AND/OR STORAGE	NA	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

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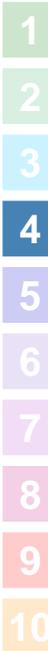
CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM <i>Jan Russell Jan Russell PBS 7/13/17 1400</i>	RECEIVED BY/STORED IN <i>RJ Lee</i> GTL Refrigerator 7/13/17 1400	TRVL-17-175; ** All Cations, TIC and TOC requesting Water Extraction (WE) shall use a 1:1 ratio. (1) 9060_TIC: COMMON {Total Inorganic Carbon}; 9060_TOC: COMMON {Total organic carbon}; (2) 6010_METALS_ICP_WE: COMMON {Aluminum, Barium, Calcium, Chromium, Iron, Magnesium, Manganese, Potassium, Silicon, Sodium}; (3) 9050_CONDUCTIVITY_WE: COMMON {Specific Conductance}; (4) 9045_pH (Non-Aqueous)_WE: COMMON {pH Measurement};
RELINQUISHED BY/REMOVED FROM <i>RJ Lee</i> GTL Refrigerator 7/14/17 1410	RECEIVED BY/STORED IN <i>PBS</i> Jan Russell Jan Russell 7/14/17 1410	
RELINQUISHED BY/REMOVED FROM <i>Jan Russell Jan Russell PBS 7/14/17 1420</i>	RECEIVED BY/STORED IN <i>A. ROGERS, TARL</i> A. ROGERS, TARL 7/14/17 1420	
RELINQUISHED BY/REMOVED FROM <i>FED EX</i> Fed Ex 7/18/17	RECEIVED BY/STORED IN <i>Jill Clarke</i> Jill Clarke 7.18.17 0910	
RELINQUISHED BY/REMOVED FROM <i>Fed Ex</i> Fed Ex	RECEIVED BY/STORED IN <i>Jill Clarke</i> Jill Clarke 7.18.17 0910	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

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





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FedEx® Tracking

779661019271

Ship date:
Mon 7/17/2017

RICHLAND, WA US

Actual delivery:
Tue 7/18/2017 9:01 am

EARTH CITY, MO US

Delivered
Signed for by: B.DANIELS

Travel History

Date/Time	Activity	Location
7/18/2017 - Tuesday		
9:01 am	Delivered	EARTH CITY, MO
7:22 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:14 am	At local FedEx facility	EARTH CITY, MO
5:41 am	At destination sort facility	BERKELEY, MO
4:53 am	Departed FedEx location	MEMPHIS, TN
12:16 am	Arrived at FedEx location	MEMPHIS, TN
7/17/2017 - Monday		
4:59 pm	Left FedEx origin facility	PASCO, WA
3:16 pm	Picked up	PASCO, WA
11:25 am	Shipment information sent to FedEx	

Shipment Facts

Tracking number	779661019271	Service	FedEx Standard Overnight
Weight	28 lbs / 12.7 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	28 lbs / 12.7 kgs
Terms	Recipient	Shipper reference	FLH
Packaging	Your Packaging	Special handling section	Deliver Weekday, Additional Handling Surcharge
Standard transit	7/18/2017 by 3:00 pm		



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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Qualifiers

Metals

Qualifier	Qualifier Description
D	The reported value is from a dilution.
Z	Sample was prepped or analyzed beyond the specified holding time
B	Estimated result. Result is less than the RL, but greater than MDL
N	Recovery exceeds upper or lower control limits
X	See case narrative notes for explanation of the 'X' flag
U	Analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
Z	Sample was prepped or analyzed beyond the specified holding time

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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SL
9045D	pH	SW846	TAL SL

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

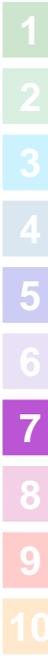


Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-23370-3	B3BMP2	Soil	07/14/17 10:45	07/18/17 09:10
160-23370-6	B3BMR4	Soil	07/14/17 13:00	07/18/17 09:10
160-23370-8	B3BMN1	Soil	07/13/17 09:30	07/18/17 09:10



Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
 SDG: SL2590A

Method: 6010C - Metals (ICP)

Client Sample ID: B3BMR4
Date Collected: 07/14/17 13:00
Date Received: 07/18/17 09:10

Lab Sample ID: 160-23370-6
Matrix: Soil
Percent Solids: 94.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	8900	D Z	97.3	24.3	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Barium	75.7	D Z	24.3	7.3	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Calcium	8720	D Z	1220	365	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Chromium	20.3	D Z	4.9	1.2	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Iron	18100	D Z	48.6	12.2	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Magnesium	6610	D Z	486	122	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Manganese	356	D Z	4.9	1.2	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Potassium	2080	B D Z	2430	730	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5
Silicon	407	D Z N	207	51.6	mg/Kg	☼	02/21/18 09:18	02/22/18 11:36	5
Sodium	2690	D Z	486	122	mg/Kg	☼	02/19/18 12:12	02/20/18 16:01	5

Client Sample ID: B3BMN1
Date Collected: 07/13/17 09:30
Date Received: 07/18/17 09:10

Lab Sample ID: 160-23370-8
Matrix: Soil
Percent Solids: 98.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5450	D Z	91.3	22.8	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Barium	70.0	D Z	22.8	6.8	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Calcium	6930	D Z	1140	342	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Chromium	8.0	D Z	4.6	1.1	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Iron	14500	D Z	45.7	11.4	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Magnesium	4380	D Z	457	114	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Manganese	247	D Z	4.6	1.1	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Potassium	987	B D Z	2280	685	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5
Silicon	326	D Z N	186	46.4	mg/Kg	☼	02/21/18 09:18	02/22/18 11:54	5
Sodium	155	B D Z	457	114	mg/Kg	☼	02/19/18 12:12	02/20/18 16:19	5

General Chemistry

Client Sample ID: B3BMP2
Date Collected: 07/14/17 10:45
Date Received: 07/18/17 09:10

Lab Sample ID: 160-23370-3
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	9.57	Z	0.0998	0.0998	SU		02/22/18 20:06	02/22/18 21:49	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-351868/1-A
Matrix: Solid
Analysis Batch: 352190

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 351868

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4.9	U	19.5	4.9	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Barium	1.5	U	4.9	1.5	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Calcium	73.2	U	244	73.2	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Chromium	0.24	U	0.98	0.24	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Iron	2.4	U	9.8	2.4	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Magnesium	24.4	U	97.7	24.4	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Manganese	0.24	U	0.98	0.24	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Potassium	146	U	488	146	mg/Kg		02/19/18 12:12	02/20/18 15:52	1
Sodium	24.4	U	97.7	24.4	mg/Kg		02/19/18 12:12	02/20/18 15:52	1

Lab Sample ID: LCSSRM 160-351868/2-A ^2
Matrix: Solid
Analysis Batch: 352190

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 351868

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	Limits
Aluminum	8090	6068	D	mg/Kg		75.0	39.6 - 160.7
Barium	217	186.4	D	mg/Kg		85.9	73.7 - 128.1
Calcium	6010	4822	D	mg/Kg		80.2	73.7 - 126.3
Chromium	107	90.43	D	mg/Kg		84.5	69.4 - 134.6
Iron	14600	11090	D	mg/Kg		76.0	36.1 - 163.7
Magnesium	2930	2598	D	mg/Kg		88.7	65.9 - 134.5
Manganese	311	262.8	D	mg/Kg		84.5	74.9 - 125.4
Potassium	2620	2086	D	mg/Kg		79.6	61.1 - 138.9
Sodium	252	180.0	D	mg/Kg		71.4	32.9 - 167.5

Lab Sample ID: 160-23370-6 MS
Matrix: Soil
Analysis Batch: 352190

Client Sample ID: B3BMR4
Prep Type: Total/NA
Prep Batch: 351868

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aluminum	8900	D Z	1010	12520	D X	mg/Kg	☼	358	75 - 125
Barium	75.7	D Z	101	176.9	D	mg/Kg	☼	100	75 - 125
Calcium	8720	D Z	1010	10510	D X	mg/Kg	☼	177	75 - 125
Chromium	20.3	D Z	101	122.4	D	mg/Kg	☼	101	75 - 125
Iron	18100	D Z	1010	19440	D X	mg/Kg	☼	136	75 - 125
Magnesium	6610	D Z	1010	7925	D X	mg/Kg	☼	130	75 - 125
Manganese	356	D Z	101	464.1	D	mg/Kg	☼	106	75 - 125
Potassium	2080	B D Z	1010	3231	D	mg/Kg	☼	114	75 - 125
Sodium	2690	D Z	1010	3700	D	mg/Kg	☼	100	75 - 125

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

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

Lab Sample ID: 160-23370-6 MSD
Matrix: Soil
Analysis Batch: 352190

Client Sample ID: B3BMR4
Prep Type: Total/NA
Prep Batch: 351868

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Aluminum	8900	D Z	1020	12430	D X	mg/Kg	☼	348	75 - 125	1	30	
Barium	75.7	D Z	102	199.8	D	mg/Kg	☼	122	75 - 125	12	30	
Calcium	8720	D Z	1020	10480	D X	mg/Kg	☼	174	75 - 125	0	30	
Chromium	20.3	D Z	102	121.4	D	mg/Kg	☼	100	75 - 125	1	30	
Iron	18100	D Z	1020	19340	D X	mg/Kg	☼	126	75 - 125	0	30	
Magnesium	6610	D Z	1020	7870	D X	mg/Kg	☼	124	75 - 125	1	30	
Manganese	356	D Z	102	464.8	D	mg/Kg	☼	107	75 - 125	0	30	
Potassium	2080	B D Z	1020	3197	D	mg/Kg	☼	110	75 - 125	1	30	
Sodium	2690	D Z	1020	3648	D	mg/Kg	☼	95	75 - 125	1	30	

Lab Sample ID: MB 160-352205/1-A
Matrix: Solid
Analysis Batch: 352537

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 352205

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Silicon	9.7	U	38.9	9.7	mg/Kg		02/21/18 09:18	02/22/18 11:27	1

Lab Sample ID: LCS 160-352205/2-A
Matrix: Solid
Analysis Batch: 352537

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 352205

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	RPD
Silicon	448	315.5		mg/Kg		70	27 - 107	

Lab Sample ID: 160-23370-6 MS
Matrix: Soil
Analysis Batch: 352537

Client Sample ID: B3BMR4
Prep Type: Total/NA
Prep Batch: 352205

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec.	
				Result	Qualifier				Limits	RPD
Silicon	407	D Z N	512	470.6	D N	mg/Kg	☼	12	75 - 125	

Lab Sample ID: 160-23370-6 MSD
Matrix: Soil
Analysis Batch: 352537

Client Sample ID: B3BMR4
Prep Type: Total/NA
Prep Batch: 352205

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Silicon	407	D Z N	507	409.9	D N	mg/Kg	☼	0.6	75 - 125	14	30	

Method: 9045D - pH

Lab Sample ID: 160-24283-A-3-E DU
Matrix: Solid
Analysis Batch: 352560

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 352555

Analyte	Sample Result	Sample Qualifier	DU DU		Unit	D	RPD	Limit
			Result	Qualifier				
pH	9.99		10.08		SU		0.9	5

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Method: 9045D - pH (Continued)

Lab Sample ID: LCS 160-352560/6
Matrix: Solid
Analysis Batch: 352560

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.050		SU		101	99.0 - 101.0

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009TestAmerica Job ID: 160-23370-2
SDG: SL2590A

Metals

Prep Batch: 351868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23370-6	B3BMR4	Total/NA	Soil	3050B	
160-23370-8	B3BMN1	Total/NA	Soil	3050B	
MB 160-351868/1-A	Method Blank	Total/NA	Solid	3050B	
LCSSRM 160-351868/2-A ^2	Lab Control Sample	Total/NA	Solid	3050B	
160-23370-6 MS	B3BMR4	Total/NA	Soil	3050B	
160-23370-6 MSD	B3BMR4	Total/NA	Soil	3050B	

Analysis Batch: 352190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23370-6	B3BMR4	Total/NA	Soil	6010C	351868
160-23370-8	B3BMN1	Total/NA	Soil	6010C	351868
MB 160-351868/1-A	Method Blank	Total/NA	Solid	6010C	351868
LCSSRM 160-351868/2-A ^2	Lab Control Sample	Total/NA	Solid	6010C	351868
160-23370-6 MS	B3BMR4	Total/NA	Soil	6010C	351868
160-23370-6 MSD	B3BMR4	Total/NA	Soil	6010C	351868

Prep Batch: 352205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23370-6	B3BMR4	Total/NA	Soil	3050B	
160-23370-8	B3BMN1	Total/NA	Soil	3050B	
MB 160-352205/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 160-352205/2-A	Lab Control Sample	Total/NA	Solid	3050B	
160-23370-6 MS	B3BMR4	Total/NA	Soil	3050B	
160-23370-6 MSD	B3BMR4	Total/NA	Soil	3050B	

Analysis Batch: 352537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23370-6	B3BMR4	Total/NA	Soil	6010C	352205
160-23370-8	B3BMN1	Total/NA	Soil	6010C	352205
MB 160-352205/1-A	Method Blank	Total/NA	Solid	6010C	352205
LCS 160-352205/2-A	Lab Control Sample	Total/NA	Solid	6010C	352205
160-23370-6 MS	B3BMR4	Total/NA	Soil	6010C	352205
160-23370-6 MSD	B3BMR4	Total/NA	Soil	6010C	352205

General Chemistry

Prep Batch: 352555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23370-3	B3BMP2	Total/NA	Soil	DILeach_Prep	
160-24283-A-3-E DU	Duplicate	Total/NA	Solid	DILeach_Prep	

Analysis Batch: 352560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23370-3	B3BMP2	Total/NA	Soil	9045D	352555
LCS 160-352560/6	Lab Control Sample	Total/NA	Solid	9045D	
160-24283-A-3-E DU	Duplicate	Total/NA	Solid	9045D	352555