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ANALYTICAL REPORT

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

Laboratory Job ID: 160-32590-1
Laboratory Sample Delivery Group: SL32590-1
Client Project/Site: I19-008/I19-009
Revision: 1

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

Attn: Mr. Scot Fitzgerald

Authorized for release by:
4/9/2019 10:20:03 AM

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

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

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

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Laboratory Job ID: 160-32590-1
SDG: SL32590-1

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Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

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Job ID: 160-32590-1

Laboratory: Eurofins TestAmerica, St. Louis

Narrative

CASE NARRATIVE

Rev. 1 - Per SIR19-0555, Pb is reported for samples B3MJW7 and B3MJW8 by method 6020B.

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
January 31, 2019
Attention: Scot Fitzgerald

SDG	: SL32590-1
Number of Samples	: 14 samples
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: January 10, 2019

II. Introduction

On January 10, 14 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: I19-008 and I19-009

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.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

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

Case Narrative

Client: CH2M Hill Plateau Remediation Company
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Laboratory: Eurofins TestAmerica, St. Louis (Continued)

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

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: 411176

The post digestion spike % recovery for Calcium and Sodium associated with batch preparation batch 160-410517 and analytical batch 160-411176 was outside of control limits indicating potential matrix interference. (160-32590-A-8-A PDS)

Tritium

Prep Batch: 410502

Due to the high concentration of tritium, the matrix spike (MS) could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. The results are reported with this narrative. B3MH37 (160-32590-10), (LCS 160-410502/2-A), (MB 160-410502/1-A), (160-32599-B-1-A), (160-32599-B-1-B DU), (160-32599-B-11-A) and (160-32599-B-11-B MS)

The client has requested RPD be reported as precision criteria. The RPD tends to "inflate" at low sample activity (near and below the MDC) due to the high relative uncertainty of the measurements. At low activity the RER (relative error ratio) or DER (duplicate error ratio)

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Job ID: 160-32590-1 (Continued)

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

are better indicators. The laboratory typically uses a dual criterion: either the RER is ≤ 1 or the RPD ≤ 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.

Iodine-129

Prep Batch: 412584

The client has requested RPD be reported as precision criteria. The RPD tends to "inflate" at low sample activity (near and below the MDC) 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 ≤ 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.

Technetium-99

Prep Batch: 410726

Insufficient sample volume was available to perform a sample duplicate (DUP). A laboratory control sample duplicate (LCS/LCSD) was preformed to display batch precision.

The following samples have tracer recoveries above the 105% QC limit; (MB- 136%, LCS- 111%). There is insufficient volume to re-analyze samples. The samples have been truncated to 100% to reduce any potential bias a high carrier recovery may have. The results are reported with this narrative. (LCS 160-410726/2-A) and (MB 160-410726/1-A)

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

ICPMS Metals
Gross Alpha/Beta
Carbon-14

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

Awalt, Jayna

From: Cutsforth, Erika C <erika_c_cutsforth@rl.gov>
Sent: Monday, December 10, 2018 10:29 AM
To: Awalt, Jayna; Medley, Heather A; Fitzgerald, Scot L; Hey, Bruce E; Calixto, Siobhan E; ^CPP Sample Management; Waters-husted, Karen S; Cutsforth, Erika C
Subject: Paperwork Requesting I-129 to be Run by SEP_LSC

-External Email-

Jayna,

For paperwork requesting I-129 analysis including the following service list: I129LL_SEP_LEPS_GS_LL: COMMON, please disregard and run I-129 by SEP_LSC. Please use this email in lieu of a SIR as the formal request (and include a copy in each impacted SDG).

Thank you,

Erika Cutsforth
CH2M Hill Plateau Remediation Company
Sample Management and Reporting
200 East / MO-277 /A-108
509-373-5869
Erika_C_Cutsforth@rl.gov

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR19-0555
Rev. Number: 0
Date Initiated: 04/09/2019

SAMPLE EVENT INFORMATION

SAF NUM(S): I19-009

LABORATORY: TASL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 2

SAMPLE NUMBERS: B3MJW7, B3MJW8

SAMPLE MATRIX: WATER

SDG NUM(S): SL32590-1

ISSUE BACKGROUND

CLASS: General Laboratory Direction

TYPE: Addition of Analyses

DESCRIPTION: Lead by 6020 analysis was needed for the samples listed above; however, it was not previously requested.

RESOLUTION

PROPOSED RESOLUTION: Please report analysis result for lead by 6020 and resubmit the hard and electronic data packages.

FINAL RESOLUTION: Accept proposed resolution.

SUBMITTED BY:

CUTSFORTH, EC 04/09/2019

ACCEPTED BY:

AWALT, JK 04/09/2019

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-32590-1
SDG Number: SL32590-1

Login Number: 32590
List Number: 1
Creator: Press, Nicholas B

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	2.0
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").	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	C.O.C. # I19-008-224 Page 1 of 1

Collector: Mike Esperza /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-008	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, JANUARY 2019	**Logbook No.:** HNF-N-506 -10464	**Ice Chest No.:** GWS-374
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 777415475926
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 16486

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
B3MH33	N	W	JAN 09 2019	1000	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

Relinquished By: Mike Esperza /CHPRC	Mike Esperza	JAN 09 2019 1025	Received By: Lesly Wall /CHPRC	Lesly Wall	JAN 09 2019 1025
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
Relinquished By: Lesly Wall /CHPRC	Lesly Wall	JAN 09 2019 1400	Received By: FEDEX		
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
Relinquished By: FEDEX			Received By: Nicholas Press	Nicholas Press	1-10-19 0940
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
Relinquished By:			Received By:		
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquids
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-020 Page 1 of 1

Collector: Mike Esperza /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650	
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071	
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506-104/64	**Ice Chest No.:** GWS-374	
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774154755926	
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486	

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
B3MKX7	N	W	JAN 09 2019	0905	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3MKY1	Y	W	↓	↓	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2

	Relinquished By: Print First and Last Name	Signature	Date/Time	Received By: Print First and Last Name	Signature	Date/Time
1	Mike Esperza /CHPRC	Mike Esperza	JAN 09 2019 1025	Lesly Wall /CHPRC	Lesly Wall	JAN 09 2019 1025
2	Lesly Wall /CHPRC	Lesly Wall	JAN 09 2019 1400	FEDEX		
3	FEDEX			Nicholas Press	Nicholas Press	1-10-19 08:40
4						

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

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

Printed On 11/19/2018 FSR ID = FSR72616 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-192 Page 1 of 1

Collector: Larry Rosane /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506 105/36	**Ice Chest No.:** GWS-374
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774154755926
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486

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
B3MKN0	N	W	JAN 08 2019	1229	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3MKN3	Y	W	JAN 08 2019	1229	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By: Larry Rosane /CHPRC — Larry Rosane — JAN 08 2019 1310	Received By: SSH-1 — JAN 08 2019 1310	Matrix *	
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	S = Soil	DS = Drum Solids
Relinquished By: SSH-1 — JAN 09 2019 1100	Received By: Lesly Wall /CHPRC — Lesly Wall — JAN 09 2019 1100	SE = Sediment	DL = Drum Liquids
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	SO = Solid	T = Tissue
Relinquished By: Lesly Wall /CHPRC — Lesly Wall — JAN 09 2019 1400	Received By: FEDEX	SL = Sludge	WI = Wipe
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	W = Water	L = Liquid
Relinquished By: FED EX	Received By: Nicholas Ross Nicholson — 1-10-19/0840	O = Oil	V = Vegetation
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	A = Air	X = Other

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

Printed On 11/19/2018 — FSR ID = FSR72576 — A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-395 Page 1 of 1

Collector: Juan Aguilar /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506-104163	**Ice Chest No.:** GWS-374
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774154755926
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486

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
B3ML40	N	W	1-8-19	1227	1x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B3ML40	N	W	1-8-19	1227	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Juan Aguilar /CHPRC		JAN 0 8 2019 1255	SSU-1		JAN 0 8 2019 1255
SSU-1		JAN 0 9 2019 1100	Lesly Wall /CHPRC		JAN 0 9 2019 1100
Lesly Wall /CHPRC		JAN 0 9 2019 1400	FEDEX		
FED EX			Nicholas Pass		1-10-19 0840

Matrix *
S = Soil, DS = Drum Solids
SE = Sediment, DL = Drum Liquids
SO = Solid, T = Tissue
SL = Sludge, WI = Wipe
W = Water, L = Liquid
O = Oil, V = Vegetation
A = Air, X = Other

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

Printed On 11/19/2018 FSR ID = FSR72549 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-405 70 Page 1 of 1

Collector: Mike Esparza /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506	**Ice Chest No.:** GWS-374
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774154755926
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486

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
B3MKX0	N	W	JAN 09 2019	1100	1x500-mL G/P	C14_LSC: COMMON	6 Months	None

1300 CA 1-9-19

Relinquished By: Mike Esparza /CHPRC	Signature	JAN 09 2019 1400	Received By: Christina Aguilar /CHPRC	Signature	JAN 09 2019 1300
Relinquished By: Christina Aguilar /CHPRC	Signature	JAN 09 2019 1400	Received By: FEDEX	Signature	
Relinquished By:	Signature	FEDEX	Received By: Nicholas Press	Signature	1-10-19/0810
Relinquished By:	Signature		Received By:	Signature	

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

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

Printed On 11/19/2018 (Rev. 1)

FSR ID = FSR72559

A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-408 Page 1 of 1

Collector: Mike Esparza /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650	
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071	
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506 ~104/164	**Ice Chest No.:** Cws-374	
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7741 5475 5926	
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486	

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
B3MK30	Y	W	JAN 0 9 2019	1227	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 04; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3MK28	N	W	↓	↓	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 04; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2

1300 CA 1-9-19

Relinquished By: Mike Esparza /CHPRC	Mike Esparza	JAN 0 9 2019 1400	Received By: Christina Aguilar /CHPRC	CmA	JAN 0 9 2019 1300
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Christina Aguilar /CHPRC	CmA	JAN 0 9 2019 1400	Received By: FEDEX		
Print First and Last Name 1-9-19	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: FED EX			Received By: Nicholas Press	Nicholas Press	1-10-19/0840
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:			Received By:		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-008-225 Page 1 of 1

Collector:	Mike Esparza /CHPRC SL32590-1	**Contact/Requester:**	Karen Waters-Husted	**Telephone No.:**	509-376-4650
SAF No.:	I19-008	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	AEA, JANUARY 2019	**Logbook No.:**	HNF-N-506-104/64	**Ice Chest No.:**	CWS-374
Shipped To (Lab):	TestAmerica St. Louis	**Method of Shipment:**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	774154755926
Protocol:	SURV	**Priority:**	30 Days	**Offsite Property No.:**	104866

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
B3MH37	N		JAN 09 2019	1140	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None

1300 1400 do 1-9-19

Relinquished By: Mike Esparza /CHPRC		JAN 09 2019	Received By: Christina Aguilar /CHPRC		JAN 09 2019 1300
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Christina Aguilar /CHPRC		JAN 09 2019 1400	Received By: FEDEX		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: FED EX			Received By: Nicholas Pass		1-10-19/0840
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:			Received By:		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquids
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

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

Printed On 11/19/2018 (Rev. 1)

FSR ID = FSR72561

A-6004-842 (REV 3)

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-407 Page 1 of 1

Collector: Mike Esparza /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650	
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071	
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506 - 104/164	**Ice Chest No.:** GWS-374	
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7741 5475 5926	
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486	

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
B3MKY7	N	W	JAN 0 9 2019	1140	1x500-mL G/P	C14_LSC: COMMON	6 Months	None

1300 LA 1-9-19

Relinquished By: Mike Esparza /CHPRC	Mike Esparza	JAN 0 9 2019	Received By: Christina Aguilar /CHPRC	Christina Aguilar	JAN 0 9 2019 1300
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Christina Aguilar /CHPRC	Christina Aguilar	JAN 0 9 2019 1400	Received By: FEDEX		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:	FED EX		Received By: Nicholas Bress	Nicholas Bress	1-10-19/0840
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:			Received By:		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

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

Printed On 11/19/2018 FSR ID = FSR72561 A-6004-842 (REV 3)

4/9/2019 (Rev. 1)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-008-226
		Page 1 of 1

Collector:	Mike Esparza /CHPRC SL32590-1	**Contact/Requester:**	Karen Waters-Husted	**Telephone No.:**	509-376-4650
SAF No.:	I19-008	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	AEA, JANUARY 2019	**Logbook No.:**	HNF-N-506 – 104/164	**Ice Chest No.:**	GWS-374
Shipped To (Lab):	TestAmerica St. Louis	**Method of Shipment:**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	774154755926
Protocol:	SURV	**Priority:**	30 Days	**Offsite Property No.:**	10486

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
B3MH41	N	W	JAN 09 2019	1227	1x500-mL G/P	TC99_SEP_LSC: COMMON	6 Months	HNO3 to pH <2
B3MH41	N	W	↓	↓	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

Relinquished By: Mike Esparza /CHPRC	Mike Esparza	JAN 09 2019 1300	Received By: Christina Aguilar /CHPRC	Christina Aguilar	JAN 09 2019 1300
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Christina Aguilar /CHPRC	Christina Aguilar	JAN 09 2019 1400	Received By: FEDEX		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:	FED EX		Received By: Nicholas Bross	Nicholas Bross	1-10-19 0840
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:			Received By:		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquids
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

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

Printed On 11/19/2018 (Rev. 1)

FSR ID = FSR72562

A-6004-842 (REV 3)

70105

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-430 Page 1 of 1

Collector: Kathy Turner /CHPRC SL32590-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650	
SAF No.: I19-009	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071	
Project Title: CERCLA, JANUARY 2019	**Logbook No.:** HNF-N-506 -104	**Ice Chest No.:** GWS-374	
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment:** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774154755926	
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10486	

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
B3MJW7	N	W	1/9/19	0921	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 05	6 Months	HNO3 to pH <2
B3MJW8	Y	W	1	1	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 05	6 Months	HNO3 to pH <2

Relinquished By	Print First and Last Name	Signature	Date/Time	Received By	Print First and Last Name	Signature	Date/Time
Kathy Turner /CHPRC	Kathy Turner	Kathy Turner	JAN 09 2019 1201	Lesly Wall /CHPRC	Lesly Wall	Lesly Wall	JAN 09 2019 1201
Lesly Wall /CHPRC	Lesly Wall	Lesly Wall	JAN 09 2019 1400	FEDEX			
FEDEX				Nicholas Russ	Nicholas Russ	Nicholas Russ	1-10-19/0840

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

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

January 11,2019

Dear Customer:

The following is the proof-of-delivery for tracking number **774154755926**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Shipping/Receiving
Signed for by:	R.CASTELLO	**Delivery location:**	EARTH CITY, MO
Service type:	FedEx Priority Overnight	**Delivery date:**	Jan 10, 2019 08:39
Special Handling:	Deliver Weekday Additional Handling Surcharge Direct Signature Required		

Signature image is available. In order to view image and detailed information, the shipper or payor account number of the shipment must be provided.

Shipping Information:

Tracking number:	774154755926	**Ship date:**	Jan 9, 2019
		Weight:	70.0 lbs/31.8 kg

Recipient:
EARTH CITY, MO US

Shipper:
Richland, WA US

Reference

ptr#10486/cooler#gws-374

Thank you for choosing FedEx.

Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Estimated result. Result is less than the RL, but greater than MDL
D	The reported value is from a dilution.
U	Analyzed for but not detected.
X	See case narrative notes for explanation of the 'X' flag

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	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: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	TAL SL
6020B	Metals (ICP/MS)	SW846	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
9310	Gross Alpha / Beta (GFPC)	SW846	TAL SL
C-01-1	Carbon-14 (EERF C-01-1)	EERF	TAL SL
SM 7500	Iodine-129 (LSC)	SM	TAL SL
TC-02-RC	Technetium-99 (LSC)	DOE	TAL SL
3010A	Preparation, Total Metals	SW846	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
Ext_Chrom_LSC	Preparation, Extraction Chromatography	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
SM 7500	Preparation, Reduction / Precipitation (SM7500 I B)	SM	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EERF = EERF
EPA = US Environmental Protection Agency
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = Eurofins 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: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-32590-1	B3MH33	Water	01/09/19 10:00	01/10/19 08:40
160-32590-2	B3MKX7	Water	01/09/19 09:05	01/10/19 08:40
160-32590-3	B3MKY1	Water	01/09/19 09:05	01/10/19 08:40
160-32590-4	B3MKN0	Water	01/08/19 12:29	01/10/19 08:40
160-32590-5	B3MKN3	Water	01/08/19 12:29	01/10/19 08:40
160-32590-6	B3ML40	Water	01/08/19 12:27	01/10/19 08:40
160-32590-7	B3MKX0	Water	01/09/19 11:00	01/10/19 08:40
160-32590-8	B3MK30	Water	01/09/19 12:27	01/10/19 08:40
160-32590-9	B3MK28	Water	01/09/19 12:27	01/10/19 08:40
160-32590-10	B3MH37	Water	01/09/19 11:40	01/10/19 08:40
160-32590-11	B3MKY7	Water	01/09/19 11:40	01/10/19 08:40
160-32590-12	B3MH41	Water	01/09/19 12:27	01/10/19 08:40
160-32590-13	B3MJW7	Water	01/09/19 09:21	01/10/19 08:40
160-32590-14	B3MJW8	Water	01/09/19 09:21	01/10/19 08:40

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: 6010D - Metals (ICP)

Client Sample ID: B3MK28
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**31.3**	**B**	100	25.0	ug/L		01/14/19 18:53	01/17/19 22:53	1
Calcium	**43900**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:53	1
Iron	**46.7**	**B**	100	30.0	ug/L		01/14/19 18:53	01/17/19 22:53	1
Magnesium	**13200**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:53	1
Potassium	**6520**		5000	1500	ug/L		01/14/19 18:53	01/17/19 22:53	1
Sodium	**22800**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:53	1
Vanadium	**12.4**	**B**	50.0	4.0	ug/L		01/14/19 18:53	01/17/19 22:53	1

Client Sample ID: B3MJW7
Date Collected: 01/09/19 09:21
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	100	25.0	ug/L		01/14/19 18:53	01/17/19 22:58	1
Calcium	**42300**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:58	1
Iron	**54.4**	**B**	100	30.0	ug/L		01/14/19 18:53	01/17/19 22:58	1
Magnesium	**10800**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:58	1
Potassium	**5050**		5000	1500	ug/L		01/14/19 18:53	01/17/19 22:58	1
Sodium	**15900**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:58	1
Vanadium	4.0	U	50.0	4.0	ug/L		01/14/19 18:53	01/17/19 22:58	1

Method: 6010D - Metals (ICP) - Dissolved

Client Sample ID: B3MK30
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**31.1**	**B**	100	25.0	ug/L		01/14/19 18:53	01/17/19 22:17	1
Calcium	**43700**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:17	1
Iron	30.0	U	100	30.0	ug/L		01/14/19 18:53	01/17/19 22:17	1
Magnesium	**13100**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:17	1
Potassium	**6460**		5000	1500	ug/L		01/14/19 18:53	01/17/19 22:17	1
Sodium	**22500**		1000	300	ug/L		01/14/19 18:53	01/17/19 22:17	1
Vanadium	**14.0**	**B**	50.0	4.0	ug/L		01/14/19 18:53	01/17/19 22:17	1

Client Sample ID: B3MJW8
Date Collected: 01/09/19 09:21
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	100	25.0	ug/L		01/14/19 18:53	01/17/19 23:03	1
Calcium	**43200**		1000	300	ug/L		01/14/19 18:53	01/17/19 23:03	1
Iron	**34.0**	**B**	100	30.0	ug/L		01/14/19 18:53	01/17/19 23:03	1
Magnesium	**11100**		1000	300	ug/L		01/14/19 18:53	01/17/19 23:03	1
Potassium	**5170**		5000	1500	ug/L		01/14/19 18:53	01/17/19 23:03	1
Sodium	**16300**		1000	300	ug/L		01/14/19 18:53	01/17/19 23:03	1
Vanadium	4.0	U	50.0	4.0	ug/L		01/14/19 18:53	01/17/19 23:03	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: 6020B - Metals (ICP/MS)

Client Sample ID: B3MKX7
Date Collected: 01/09/19 09:05
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	**2.4**	**D**	1.0	0.40	ug/L		01/14/19 18:59	01/19/19 04:14	2

Client Sample ID: B3MKN0
Date Collected: 01/08/19 12:29
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**75.5**	**D**	10.0	4.0	ug/L		01/14/19 18:59	01/19/19 04:28	2

Client Sample ID: B3MK28
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	20.0	U D	50.0	20.0	ug/L		01/14/19 18:57	01/19/19 02:53	2
Uranium	**10.0**	**D**	1.0	0.40	ug/L		01/14/19 18:57	01/19/19 02:53	2
Antimony	2.0	U D	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 02:53	2
Cobalt	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 02:53	2
Manganese	2.0	U D	4.0	2.0	ug/L		01/14/19 18:57	01/19/19 02:53	2
Nickel	**4.0**	**B D**	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 02:53	2
Thallium	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 02:53	2
Zinc	7.5	U D	20.0	7.5	ug/L		01/14/19 18:57	01/19/19 02:53	2

Client Sample ID: B3MJW7
Date Collected: 01/09/19 09:21
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**7.1**	**B D**	10.0	4.0	ug/L		01/14/19 18:57	01/19/19 03:00	2
Cobalt	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 03:00	2
Manganese	**38.4**	**D**	4.0	2.0	ug/L		01/14/19 18:57	01/19/19 03:00	2
Nickel	**3.0**	**B D**	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 03:00	2
Lead	1.0	U D	3.0	1.0	ug/L		01/14/19 18:57	01/19/19 03:00	2

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

Client Sample ID: B3MKY1
Date Collected: 01/09/19 09:05
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	**2.4**	**D**	1.0	0.40	ug/L		01/14/19 18:59	01/19/19 04:21	2

Client Sample ID: B3MKN3
Date Collected: 01/08/19 12:29
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**75.1**	**D**	10.0	4.0	ug/L		01/14/19 18:59	01/19/19 04:35	2

Client Sample ID: B3MK30
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**121**	**D**	50.0	20.0	ug/L		01/14/19 18:57	01/19/19 02:20	2
Uranium	**10.0**	**D**	1.0	0.40	ug/L		01/14/19 18:57	01/19/19 02:20	2

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: 6020B - Metals (ICP/MS) - Dissolved (Continued)

Client Sample ID: B3MK30
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 02:20	2
Manganese	2.0	U D	4.0	2.0	ug/L		01/14/19 18:57	01/19/19 02:20	2
Nickel	**2.5**	**B D**	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 02:20	2
Antimony	2.0	U D	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 02:20	2
Thallium	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 02:20	2
Zinc	7.5	U D	20.0	7.5	ug/L		01/14/19 18:57	01/19/19 02:20	2

Client Sample ID: B3MJW8
Date Collected: 01/09/19 09:21
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	4.0	U D	10.0	4.0	ug/L		01/14/19 18:57	01/19/19 03:07	2
Cobalt	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 03:07	2
Manganese	**39.7**	**D**	4.0	2.0	ug/L		01/14/19 18:57	01/19/19 03:07	2
Nickel	2.0	U D	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 03:07	2
Lead	1.0	U D	3.0	1.0	ug/L		01/14/19 18:57	01/19/19 03:07	2

Method: 906.0 - Tritium, Total (LSC)

Client Sample ID: B3MH37
Date Collected: 01/09/19 11:40
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	**730**		235	243	500	317	pCi/L	01/14/19 14:15	01/15/19 04:02	1

Method: 9310 - Gross Alpha / Beta (GFPC)

Client Sample ID: B3ML40
Date Collected: 01/08/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	**8.21**		2.58	2.74	3.00	2.41	pCi/L	01/21/19 10:02	01/22/19 16:24	1
Gross Beta	**75.2**		3.39	8.25	4.00	1.27	pCi/L	01/21/19 10:02	01/22/19 16:24	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Client Sample ID: B3MKX0
Date Collected: 01/09/19 11:00
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	7.50	U	7.00	7.05	20.0	11.4	pCi/L	01/21/19 11:03	01/23/19 01:40	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Client Sample ID: B3MKY7
Date Collected: 01/09/19 11:40
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	7.98	U	7.01	7.07	20.0	11.4	pCi/L	01/21/19 11:03	01/23/19 02:42	1

Method: SM 7500 - Iodine-129 (LSC)

Client Sample ID: B3MH33
Date Collected: 01/09/19 10:00
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Iodine-129	0.0293	U	0.442	0.442	1.00	0.764	pCi/L	01/27/19 07:50	01/29/19 19:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
I Carrier	*79.3*		*40 - 110*	*01/27/19 07:50*	*01/29/19 19:55*	*1*

Client Sample ID: B3ML40
Date Collected: 01/08/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Iodine-129	0.133	U	0.478	0.478	1.00	0.810	pCi/L	01/27/19 07:50	01/29/19 22:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
I Carrier	*69.3*		*40 - 110*	*01/27/19 07:50*	*01/29/19 22:08*	*1*

Client Sample ID: B3MH41
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Iodine-129	0.550	U	0.454	0.456	1.00	0.742	pCi/L	01/27/19 07:50	01/29/19 23:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
I Carrier	*75.3*		*40 - 110*	*01/27/19 07:50*	*01/29/19 23:14*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Client Sample ID: B3MH41
Date Collected: 01/09/19 12:27
Date Received: 01/10/19 08:40

Lab Sample ID: 160-32590-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	**25.2**		1.86	3.05	3.00	1.95	pCi/L	01/15/19 14:32	01/28/19 16:00	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*102*		*30 - 105*	*01/15/19 14:32*	*01/28/19 16:00*	*1*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 160-410517/1-A
Matrix: Water
Analysis Batch: 411176

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410517

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	100	25.0	ug/L		01/14/19 18:53	01/17/19 22:08	1
Calcium	300	U	1000	300	ug/L		01/14/19 18:53	01/17/19 22:08	1
Iron	30.0	U	100	30.0	ug/L		01/14/19 18:53	01/17/19 22:08	1
Magnesium	300	U	1000	300	ug/L		01/14/19 18:53	01/17/19 22:08	1
Potassium	1500	U	5000	1500	ug/L		01/14/19 18:53	01/17/19 22:08	1
Sodium	300	U	1000	300	ug/L		01/14/19 18:53	01/17/19 22:08	1
Vanadium	4.0	U	50.0	4.0	ug/L		01/14/19 18:53	01/17/19 22:08	1

Lab Sample ID: LCS 160-410517/2-A
Matrix: Water
Analysis Batch: 411176

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410517

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	200	205.7		ug/L		103	80 - 120
Calcium	10000	11020		ug/L		110	80 - 120
Iron	10000	10190		ug/L		102	80 - 120
Magnesium	10000	10350		ug/L		104	80 - 120
Potassium	10000	10040		ug/L		100	80 - 120
Sodium	10000	10200		ug/L		102	80 - 120
Vanadium	1000	988.3		ug/L		99	80 - 120

Lab Sample ID: 160-32590-8 MS
Matrix: Water
Analysis Batch: 411176

Client Sample ID: B3MK30
Prep Type: Dissolved
Prep Batch: 410517

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	31.1	B	200	238.7		ug/L		104	75 - 125
Calcium	43700		10000	55350	X	ug/L		117	75 - 125
Iron	30.0	U	10000	10240		ug/L		102	75 - 125
Magnesium	13100		10000	23770		ug/L		107	75 - 125
Potassium	6460		10000	16820		ug/L		104	75 - 125
Sodium	22500		10000	33350		ug/L		108	75 - 125
Vanadium	14.0	B	1000	1010		ug/L		100	75 - 125

Lab Sample ID: 160-32590-8 MSD
Matrix: Water
Analysis Batch: 411176

Client Sample ID: B3MK30
Prep Type: Dissolved
Prep Batch: 410517

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	31.1	B	200	234.5		ug/L		102	75 - 125	2	20
Calcium	43700		10000	54550	X	ug/L		109	75 - 125	1	20
Iron	30.0	U	10000	10320		ug/L		103	75 - 125	1	20
Magnesium	13100		10000	23660		ug/L		106	75 - 125	0	20
Potassium	6460		10000	16820		ug/L		104	75 - 125	0	20
Sodium	22500		10000	33040		ug/L		105	75 - 125	1	20
Vanadium	14.0	B	1000	1014		ug/L		100	75 - 125	0	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 160-410518/1-A
Matrix: Water
Analysis Batch: 411368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410518

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	20.0	U D	50.0	20.0	ug/L		01/14/19 18:57	01/19/19 01:46	2
Chromium	4.0	U D	10.0	4.0	ug/L		01/14/19 18:57	01/19/19 01:46	2
Uranium	0.40	U D	1.0	0.40	ug/L		01/14/19 18:57	01/19/19 01:46	2
Cobalt	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 01:46	2
Manganese	2.0	U D	4.0	2.0	ug/L		01/14/19 18:57	01/19/19 01:46	2
Antimony	2.0	U D	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 01:46	2
Lead	1.0	U D	3.0	1.0	ug/L		01/14/19 18:57	01/19/19 01:46	2
Nickel	2.0	U D	5.0	2.0	ug/L		01/14/19 18:57	01/19/19 01:46	2
Thallium	0.90	U D	2.0	0.90	ug/L		01/14/19 18:57	01/19/19 01:46	2
Zinc	7.5	U D	20.0	7.5	ug/L		01/14/19 18:57	01/19/19 01:46	2

Lab Sample ID: LCS 160-410518/2-A
Matrix: Water
Analysis Batch: 411368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410518

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10000	9020	D	ug/L		90	80 - 120
Chromium	1000	938.5	D	ug/L		94	80 - 120
Uranium	1000	966.6	D	ug/L		97	80 - 120
Cobalt	1000	932.7	D	ug/L		93	80 - 120
Manganese	1000	935.6	D	ug/L		94	80 - 120
Antimony	500	477.2	D	ug/L		95	80 - 120
Lead	1000	951.4	D	ug/L		95	80 - 120
Nickel	1000	944.2	D	ug/L		94	80 - 120
Thallium	200	191.6	D	ug/L		96	80 - 120
Zinc	1000	888.2	D	ug/L		89	80 - 120

Lab Sample ID: 160-32590-8 MS
Matrix: Water
Analysis Batch: 411368

Client Sample ID: B3MK30
Prep Type: Dissolved
Prep Batch: 410518

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	121	D	10000	9308	D	ug/L		92	75 - 125
Chromium	4.1	B D	1000	965.9	D	ug/L		96	75 - 125
Uranium	10.0	D	1000	963.4	D	ug/L		95	75 - 125
Cobalt	0.90	U D	1000	952.7	D	ug/L		95	75 - 125
Manganese	2.0	U D	1000	968.2	D	ug/L		97	75 - 125
Antimony	2.0	U D	500	470.4	D	ug/L		94	75 - 125
Lead	1.0	U D	1000	930.7	D	ug/L		93	75 - 125
Nickel	2.5	B D	1000	971.0	D	ug/L		97	75 - 125
Thallium	0.90	U D	200	187.0	D	ug/L		93	75 - 125
Zinc	7.5	U D	1000	938.0	D	ug/L		94	75 - 125

Lab Sample ID: 160-32590-8 MSD
Matrix: Water
Analysis Batch: 411368

Client Sample ID: B3MK30
Prep Type: Dissolved
Prep Batch: 410518

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	121	D	10000	9034	D	ug/L		89	75 - 125	3	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

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

Lab Sample ID: 160-32590-8 MSD
Matrix: Water
Analysis Batch: 411368

Client Sample ID: B3MK30
Prep Type: Dissolved
Prep Batch: 410518

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	4.1	B D	1000	929.4	D	ug/L		93	75 - 125	4	20
Uranium	10.0	D	1000	969.8	D	ug/L		96	75 - 125	1	20
Cobalt	0.90	U D	1000	933.5	D	ug/L		93	75 - 125	2	20
Manganese	2.0	U D	1000	936.0	D	ug/L		94	75 - 125	3	20
Antimony	2.0	U D	500	470.3	D	ug/L		94	75 - 125	0	20
Lead	1.0	U D	1000	939.5	D	ug/L		94	75 - 125	1	20
Nickel	2.5	B D	1000	943.4	D	ug/L		94	75 - 125	3	20
Thallium	0.90	U D	200	188.4	D	ug/L		94	75 - 125	1	20
Zinc	7.5	U D	1000	911.9	D	ug/L		91	75 - 125	3	20

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-410502/1-A
Matrix: Water
Analysis Batch: 410707

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410502

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	85.59	U	183	183	500	314	pCi/L	01/14/19 14:15	01/14/19 22:00	1

Lab Sample ID: LCS 160-410502/2-A
Matrix: Water
Analysis Batch: 410707

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410502

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tritium			2650	2545		399	500	302	pCi/L	96	80 - 120		

Lab Sample ID: 160-32599-B-11-B MS
Matrix: Water
Analysis Batch: 410707

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 410502

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tritium	121000		2650	127500		11400	500	314	pCi/L	255	75 - 125		

Lab Sample ID: 160-32599-B-1-B DU
Matrix: Water
Analysis Batch: 410707

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 410502

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Tritium	-39	U		-58.1	U y	163	500	298	pCi/L			40	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: 9310 - Gross Alpha / Beta (GFPC)

Lab Sample ID: MB 160-411375/1-A
Matrix: Water
Analysis Batch: 411608

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 411375

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.0314	U	0.485	0.485	3.00	0.944	pCi/L	01/21/19 10:02	01/22/19 16:20	1
Gross Beta	0.874	U	0.581	0.588	4.00	0.898	pCi/L	01/21/19 10:02	01/22/19 16:20	1

Lab Sample ID: LCS 160-411375/2-A
Matrix: Water
Analysis Batch: 411608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 411375

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	50.9	45.94		6.79	3.00	1.70	pCi/L	90	80 - 120

Lab Sample ID: LCSB 160-411375/3-A
Matrix: Water
Analysis Batch: 411608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 411375

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	87.0	89.45		9.47	4.00	0.829	pCi/L	103	80 - 120

Lab Sample ID: 160-32599-A-6-C MS
Matrix: Water
Analysis Batch: 411955

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 411375

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	1.92	U	50.9	45.76		7.14	3.00	2.25	pCi/L	86	60 - 140

Lab Sample ID: 160-32599-A-6-D MSBT
Matrix: Water
Analysis Batch: 411955

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 411375

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	89.1		87.0	174.9		18.0	4.00	1.02	pCi/L	99	60 - 140

Lab Sample ID: 160-32599-A-6-E DU
Matrix: Water
Analysis Batch: 411955

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 411375

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Gross Alpha	1.92	U	2.111	U	1.62	3.00	2.39	pCi/L	9	20
Gross Beta	89.1		83.98		8.96	4.00	1.08	pCi/L	6	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Lab Sample ID: MB 160-411396/1-A
Matrix: Water
Analysis Batch: 411960

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 411396

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	1.021	U	6.78	6.78	20.0	11.5	pCi/L	01/21/19 11:03	01/22/19 20:30	1

Lab Sample ID: LCS 160-411396/2-A
Matrix: Water
Analysis Batch: 411960

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 411396

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Carbon-14	1130	1114		123	20.0	11.4	pCi/L	99	80 - 120

Lab Sample ID: 160-32559-A-14-D MS
Matrix: Water
Analysis Batch: 411960

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 411396

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Carbon-14	8.64	U	1120	1047		116	20.0	11.5	pCi/L	92	75 - 125

Lab Sample ID: 160-32559-A-14-C DU
Matrix: Water
Analysis Batch: 411960

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 411396

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Carbon-14	8.64	U	9.190	U	7.17	20.0	11.5	pCi/L	6	20

Method: SM 7500 - Iodine-129 (LSC)

Lab Sample ID: MB 160-412584/1-A
Matrix: Water
Analysis Batch: 412944

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 412584

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Iodine-129	-0.00294	U	0.434	0.434	1.00	0.746	pCi/L	01/27/19 07:50	01/29/19 17:43	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
I Carrier	*76.7*		*40 - 110*	*01/27/19 07:50*	*01/29/19 17:43*	*1*

Lab Sample ID: LCS 160-412584/2-A
Matrix: Water
Analysis Batch: 412944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412584

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Iodine-129	13.9	15.42		1.43	1.00	0.789	pCi/L	111	80 - 120

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: SM 7500 - Iodine-129 (LSC) (Continued)

Lab Sample ID: LCS 160-412584/2-A
Matrix: Water
Analysis Batch: 412944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412584

Carrier	LCS %Yield	LCS Qualifier	Limits
I Carrier	71.3		40 - 110

Lab Sample ID: 160-32590-1 DU
Matrix: Water
Analysis Batch: 412944

Client Sample ID: B3MH33
Prep Type: Total/NA
Prep Batch: 412584

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Iodine-129	0.0293	U		0.00266	U y	0.388	1.00	0.665	pCi/L			167	20

Carrier	DU %Yield	DU Qualifier	Limits
I Carrier	87.3		40 - 110

Method: TC-02-RC - Technetium-99 (LSC)

Lab Sample ID: MB 160-410726/1-A
Matrix: Water
Analysis Batch: 412940

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410726

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	-0.505	U	1.10	1.11	3.00	1.91	pCi/L	01/15/19 14:32	01/28/19 13:30	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tc-99m	136	X	30 - 105	01/15/19 14:32	01/28/19 13:30	1

Lab Sample ID: LCS 160-410726/2-A
Matrix: Water
Analysis Batch: 412940

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410726

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Technetium-99			30.9	29.43		3.42	3.00	1.91	pCi/L	95	80 - 120		

Tracer	LCS %Yield	LCS Qualifier	Limits
Tc-99m	111	X	30 - 105

Lab Sample ID: LCSD 160-410726/3-A
Matrix: Water
Analysis Batch: 412940

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410726

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium-99			30.9	30.69		3.54	3.00	1.92	pCi/L	99	80 - 120	4	20

Tracer	LCSD %Yield	LCSD Qualifier	Limits
Tc-99m	104		30 - 105

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Metals

Prep Batch: 410517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-8	B3MK30	Dissolved	Water	3010A	
160-32590-9	B3MK28	Total/NA	Water	3010A	
160-32590-13	B3MJW7	Total/NA	Water	3010A	
160-32590-14	B3MJW8	Dissolved	Water	3010A	
MB 160-410517/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-410517/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-32590-8 MS	B3MK30	Dissolved	Water	3010A	
160-32590-8 MSD	B3MK30	Dissolved	Water	3010A	

Prep Batch: 410518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-2	B3MKX7	Total/NA	Water	3010A	
160-32590-3	B3MKY1	Dissolved	Water	3010A	
160-32590-4	B3MKN0	Total/NA	Water	3010A	
160-32590-5	B3MKN3	Dissolved	Water	3010A	
160-32590-8	B3MK30	Dissolved	Water	3010A	
160-32590-9	B3MK28	Total/NA	Water	3010A	
160-32590-13	B3MJW7	Total/NA	Water	3010A	
160-32590-14	B3MJW8	Dissolved	Water	3010A	
MB 160-410518/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-410518/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-32590-8 MS	B3MK30	Dissolved	Water	3010A	
160-32590-8 MSD	B3MK30	Dissolved	Water	3010A	

Analysis Batch: 411176

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-8	B3MK30	Dissolved	Water	6010D	410517
160-32590-9	B3MK28	Total/NA	Water	6010D	410517
160-32590-13	B3MJW7	Total/NA	Water	6010D	410517
160-32590-14	B3MJW8	Dissolved	Water	6010D	410517
MB 160-410517/1-A	Method Blank	Total/NA	Water	6010D	410517
LCS 160-410517/2-A	Lab Control Sample	Total/NA	Water	6010D	410517
160-32590-8 MS	B3MK30	Dissolved	Water	6010D	410517
160-32590-8 MSD	B3MK30	Dissolved	Water	6010D	410517

Analysis Batch: 411368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-2	B3MKX7	Total/NA	Water	6020B	410518
160-32590-3	B3MKY1	Dissolved	Water	6020B	410518
160-32590-4	B3MKN0	Total/NA	Water	6020B	410518
160-32590-5	B3MKN3	Dissolved	Water	6020B	410518
160-32590-8	B3MK30	Dissolved	Water	6020B	410518
160-32590-9	B3MK28	Total/NA	Water	6020B	410518
160-32590-13	B3MJW7	Total/NA	Water	6020B	410518
160-32590-14	B3MJW8	Dissolved	Water	6020B	410518
MB 160-410518/1-A	Method Blank	Total/NA	Water	6020B	410518
LCS 160-410518/2-A	Lab Control Sample	Total/NA	Water	6020B	410518
160-32590-8 MS	B3MK30	Dissolved	Water	6020B	410518
160-32590-8 MSD	B3MK30	Dissolved	Water	6020B	410518

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Rad

Prep Batch: 410502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-10	B3MH37	Total/NA	Water	LSC_Dist_Susp	
MB 160-410502/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-410502/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-32599-B-11-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-32599-B-1-B DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 410726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-12	B3MH41	Total/NA	Water	Ext_Chrom_LSC	
MB 160-410726/1-A	Method Blank	Total/NA	Water	Ext_Chrom_LSC	
LCS 160-410726/2-A	Lab Control Sample	Total/NA	Water	Ext_Chrom_LSC	
LCSD 160-410726/3-A	Lab Control Sample Dup	Total/NA	Water	Ext_Chrom_LSC	

Prep Batch: 411375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-6	B3ML40	Total/NA	Water	Evaporation	
MB 160-411375/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-411375/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-411375/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
160-32599-A-6-C MS	Matrix Spike	Total/NA	Water	Evaporation	
160-32599-A-6-D MSBT	Matrix Spike	Total/NA	Water	Evaporation	
160-32599-A-6-E DU	Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 411396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-7	B3MKX0	Total/NA	Water	LSC_Dist_Susp	
160-32590-11	B3MKY7	Total/NA	Water	LSC_Dist_Susp	
MB 160-411396/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-411396/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-32559-A-14-D MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-32559-A-14-C DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 412584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-32590-1	B3MH33	Total/NA	Water	SM 7500	
160-32590-6	B3ML40	Total/NA	Water	SM 7500	
160-32590-12	B3MH41	Total/NA	Water	SM 7500	
MB 160-412584/1-A	Method Blank	Total/NA	Water	SM 7500	
LCS 160-412584/2-A	Lab Control Sample	Total/NA	Water	SM 7500	
160-32590-1 DU	B3MH33	Total/NA	Water	SM 7500	

Tracer/Carrier Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-008/I19-009

Job ID: 160-32590-1
SDG: SL32590-1

Method: SM 7500 - Iodine-129 (LSC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	I Carrier (40-110)
160-32590-1	B3MH33	79.3
160-32590-1 DU	B3MH33	87.3
160-32590-6	B3ML40	69.3
160-32590-12	B3MH41	75.3
LCS 160-412584/2-A	Lab Control Sample	71.3
MB 160-412584/1-A	Method Blank	76.7

Tracer/Carrier Legend

I Carrier = I Carrier

Method: TC-02-RC - Technetium-99 (LSC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Tc-99m (30-105)
160-32590-12	B3MH41	102
LCS 160-410726/2-A	Lab Control Sample	111 X
LCSD 160-410726/3-A	Lab Control Sample Dup	104
MB 160-410726/1-A	Method Blank	136 X

Tracer/Carrier Legend

Tc-99m = Tc-99m