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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: 160-33514-1
Laboratory Sample Delivery Group: SL33514-1
Client Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

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

Attn: Mr. Scot Fitzgerald

Authorized for release by:
5/29/2019 2:04:52 PM

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

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Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Job ID: 160-33514-1

Laboratory: Eurofins TestAmerica, St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
May 29, 2019
Attention: Scot Fitzgerald

SDG	: SL33514-1
Number of Samples	: 16 samples received; 15 samples reported in this series
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: March 30, 2019

II. Introduction

On March 30, 16 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: S19-003, I19-008, I19-009, I19-012 and I19-011

Per SIR19-0625, this SDG has been split into two reports in order to meet project deadlines due to delayed data.

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.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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.

Per CHPRC direction, due to the short hold times for Nitrate, Nitrite and Phosphate by IC (48 hours) as well as Hexavalent Chromium and 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 volatile organic analyses, several analytes are considered poor performers and will not meet CHPRC QC limits. Per CHPRC direction,

Case Narrative

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

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, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analysis, the spike/spike duplicate recoveries are outside QC limits.
- **o** - For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **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.

ICPMS Metals

Batch: 424030

Antimony was detected in method blank MB 160-423006 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "B". If the associated sample reported a result above the MDL and/or RL and MB is greater than 5% the sample concentration, the result has been flagged "C".

Gross Alpha/Beta

Prep Batch: 425436

The detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: B3MJF0 (160-33514-2), B3NB31 (160-33514-14) and (160-33640-A-6-C DU). Analytical results are reported with the detection limit achieved.

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.

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Job ID: 160-33514-1 (Continued)

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

Carbon-14

Prep Batch: 425401

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.

Gamma Spec

Prep Batch: 421963

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

B3N781 (160-33514-10), B3N782 (160-33514-12), (LCS 160-421963/2-A), (MB 160-421963/1-A) and (160-33514-B-10-B DU)

The method blank (MB) exhibits activity above the minimum detectable concentration (MDC) and a Z score greater than 3 for Co-60. Associated sample(s) have activity below the MDC. The data for the following samples have been reported with this narrative: B3N781 (160-33514-10), B3N782 (160-33514-12), (MB 160-421963/1-A) and (160-33514-B-10-B DU)

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. B3N781 (160-33514-10), B3N782 (160-33514-12) and (160-33514-B-10-B DU)

Strontium

Prep Batch: 422824

Insufficient sample volume was available to perform a sample duplicate (DUP). A laboratory control sample/ laboratory control sample

Case Narrative

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Job ID: 160-33514-1 (Continued)

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

duplicate (LCS/LCSD) was prepared to demonstrate batch precision.

Selenium-79

Prep Batch: 423069

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: 422501

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

The detection goal was not met for the following samples due to a shortened count time attributed to high activity: B3N378 (160-33514-11). Analytical results are reported with the detection limit achieved.

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

ICP Metals
Tritium

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

Reviewed and approved:

Jayna Awalt
St. Louis Project Manager

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR19-0625
Rev. Number: 0
Date Initiated: 05/20/2019

SAMPLE EVENT INFORMATION

SAF NUM(S): I19-008, I19-009, I19-011, I19-012, S19-003

LABORATORY: TASL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 16

SAMPLE NUMBERS: B3MH97, B3MJF0, B3N368, B3N378, B3N773, B3N781, B3N782, B3N7B5, B3NB31, B3NC59, B3NC77, B3NC87, B3NC89, B3NCB0, B3NCN2, B3NCN3

SAMPLE MATRIX: WATER

SDG NUM(S): SL33514-1

ISSUE BACKGROUND

CLASS: Laboratory Issue

TYPE: Reporting Issue

DESCRIPTION: Available data in this overdue SDG need to be reported to meet project deadlines.

RESOLUTION

PROPOSED RESOLUTION: Please proceed to report all completed and reviewed data and report I-129 and Gross alpha and Gross beta data in a subsequent SDG.

FINAL RESOLUTION: See as proposed.

SUBMITTED BY:

CUTSFORTH, EC 05/20/2019

ACCEPTED BY:

AWALT, JK 05/20/2019

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-33514-1
SDG Number: SL33514-1

Login Number: 33514
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	3.1, 0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <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. # I19-008-150 Page 1 of 1

Collector: Juan Aguilar /CHPRC SL33514-1	**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-506-10837	**Ice Chest No.:** ~~GWS-398~~ 237
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 777483976 4996
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3MH97	N	W	3-29-19	1131	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

160-33514 Chain of Custody

Relinquished By: Juan Aguilar /CHPRC	MAR 29 2019	1212	Received By: Troy Bacon /CHPRC Troy L. Bacon	MAR 29 2019	1212
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Troy Bacon /CHPRC Troy L. Bacon	MAR 29 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 Kress	3-30-19	0830
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 Liquid
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 3/4/2019 FSR ID = FSR76895 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-009-402 Page 1 of 1

Collector: Juan Aguilar /CHPRC SL33514-1	**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-506-108137	**Ice Chest No.:** GWS-392 237
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764996
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3MJF0	N	W	3-29-19	1131	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3MJF0	N	W	3-29-19	1131	1x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2

Relinquished By: Juan Aguilar /CHPRC		MAR 29 2019 1212	Received By: Troy Bacon /CHPRC Troy L Bacon		MAR 29 2019 1212
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Troy Bacon /CHPRC Troy L Bacon		MAR 29 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 Ross Middendorf		3-30-19/1030
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 Liquid
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. # I19-011-111 Page 1 of 1

Collector: Juan Aguilar /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-011 SL33514-1	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERCLA, FEBRUARY 2019	**Logbook No.:** HNF-N-506 -108137	**Ice Chest No.:** GW5-342 3-29-19 237
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7748397649 96
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3N368	N	W	3-29-19	0942	1x500-mL G/P	TC99_SEP_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By: Juan Aguilar /CHPRC	MAR 29 2019	1212	Received By: Troy Bacon /CHPRC Troy L. Bacon MAR 29 2019 1212
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name* *Signature* *Date/Time*
Relinquished By: Troy Bacon /CHPRC Troy L. Bacon	MAR 29 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 Lewis Nicholas Lewis 3-30-19/1030
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 Liquid
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 54165	C.O.C. # S19-003-371 Page 1 of 1

Collector:	Malcom Chunn CHPRC	**Contact/Requester:**	Karen Waters-Husted	**Telephone No.:**	509-376-4650
SAF No.:	S19-003 SL33514-1	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	CERC, March 2019	**Logbook No.:**	HNF-N-506 -106192	**Ice Chest No.:**	GWS-237
Shipped To (Lab):	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	7748 3976 4996
Protocol:	CERCLA	**Priority:**	30 Days	**Offsite Property No.:**	10784

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
B3NC59	N	W	MAR 2 9 2019	1220	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3NC59	N	W	↓	↓	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

Relinquished By:	Received By:
Malcom Chunn CHPRC — Print First and Last Name / Signature / MAR 2 9 2019 1310 Date/Time	Jeff Lucas CHPRC — Print First and Last Name / Signature / MAR 2 9 2019 1310 Date/Time
Jeff Lucas CHPRC — Print First and Last Name / Signature / MAR 2 9 2019 1400 Date/Time	FEDEX — Print First and Last Name / Signature / Date/Time
FED EX — Print First and Last Name / Signature / Date/Time	Nicholas Pruss — Print First and Last Name / Signature / 3-30-19 1030 Date/Time
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 Liquid
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 2/27/2019 FSR ID = FSR76663 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S19-003-399 Page 1 of 1

Collector: Kathy Turner /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S19-003 SL33514-1	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERC, March 2019	**Logbook No.:** HNF-N-506 -107	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3NCB0	N	W	3/29/19	~~0813~~ 0814	1x1-L P	9310_ALPHABETA_GPC: Gross Alpha	6 Months	HNO3 to pH <2

Relinquished By: Kathy Turner /CHPRC Kathy Turner MAR 29 2019 1110	Received By: Jeff Lucas /CHPRC MAR 29 2019 1110	Matrix *
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: Jeff Lucas /CHPRC MAR 29 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 Gross 3-30-19/1030
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

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

Printed On 2/27/2019 FSR ID = FSR76730 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S19-003-398 Page 1 of 1

Collector: Kathy Turner /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S19-003 SL33514-1	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERC, March 2019	**Logbook No.:** HNF-N-506-107	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3NC89	Y	W	3/29/19	0750	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3NC87	N	W	/	1	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2

Relinquished By: Kathy Turner /CHPRC Kathy Turner	MAR 2 9 2019 1110	Received By: Jeff Lucas /CHPRC	MAR 2 9 2019 1110
Relinquished By: Jeff Lucas /CHPRC	MAR 29 2019 1400	Received By: FEDEX	
Relinquished By: FED EX		Received By: Nicholas Press Nicholas Press	3-30-19/1020
Relinquished By:		Received By:	

Matrix *

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

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

Printed On 2/27/2019 FSR ID = FSR76728 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-012-106 Page 1 of 1

Collector: Juan Aguilar /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-012 SL33514-1	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, March 2019	**Logbook No.:** HNF-N-506-10813 7	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3NCN3	N	W	3-29-19	0742	1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B3NCN3	N	W	3-29-19	0742	1x500-mL G/P	SE79_SEP_IE_LSC: COMMON	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
Juan Aguilar /CHPRC		MAR 29 2019	Jeff Lucas /CHPRC		MAR 29 2019 0914
Jeff Lucas /CHPRC		MAR 29 2019 1400	FEDEX		
FEDEX			Nicholas Reese		3-30-19/1030

Matrix *

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

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

Printed On 2/27/2019 FSR ID = FSR76662 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-012-105 Page 1 of 1

Collector: Juan Aguilar /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-012 SL33514-1	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, March 2019	**Logbook No.:** HNF-N-506-108137	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7748 3976 4850
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3NCN2	N	W	3-29-19	0742	1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B3NCN2	N	W	3-29-19	0742	1x500-mL G/P	SE79_SEP_IE_LSC: COMMON	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
Juan Aguilar /CHPRC		MAR 29 2019 0914	Jeff Lucas /CHPRC		MAR 29 2019 0914
Jeff Lucas /CHPRC		MAR 29 2019 1400	FEDEX		
FED EX			Nicholas Russ		3-30-19/1030

Matrix *

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

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

Printed On 2/27/2019 FSR ID = FSR76662 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-012-068 Page 1 of 1

Collector: Juan Aguilar /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-012 SL33514-1	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, March 2019	**Logbook No.:** HNF-N-506 -108/37	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3N781	N	W	3-29-19	0742	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3N781	N	W	3-29-19	0742	1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B3N781	N	W	3-29-19	0742	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	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
Relinquished By:	Juan Aguilar /CHPRC		MAR 29 2019 0914	Received By:	Jeff Lucas /CHPRC		MAR 29 2019 0914
Relinquished By:	Jeff Lucas /CHPRC		MAR 29 2019 1400	Received By:	FEDEX		
Relinquished By:	FED EX			Received By:	Nicholas Press		3-30-19/1038
Relinquished By:				Received By:			

Matrix *

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

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

Printed On 2/27/2019 FSR ID = FSR76662 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-011-166 Page 1 of 1

Collector: Juan Aguilar /CHPRC SL335314-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650	
SAF No.: I19-011	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071	
Project Title: CERCLA, FEBRUARY 2019	**Logbook No.:** HNF-N-506 - 10837	**Ice Chest No.:** GWS-534	
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850	
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784	

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
B3N378	N	W	3-29-19	0911	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3N378	N	W	3-29-19	0911	1x500-mL G/P	TC99_SEP_LSC: COMMON	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
Juan Aguilar /CHPRC		MAR 29 2019 0914	Jeff Lucas /CHPRC		MAR 29 2019 0914
Jeff Lucas /CHPRC		MAR 29 2019 1400	FEDEX		
FEDEX			Nicholas Gross		3-30-19/1030

Matrix *

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

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

Printed On 2/26/2019 FSR ID = FSR76534 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-012-070 Page 1 of 1

Collector: Juan Aguilar /CHPRC SL33514-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-012	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, March 2019	**Logbook No.:** HNF-N-506-108137	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3N782	N	W	3-29-19	0742	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3N782	N	W	3-29-19	0742	1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
DB3N782	N	W	3-29-19	0742	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	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
Juan Aguilar /CHPRC		MAR 29 2019 0914	Jeff Lucas /CHPRC		MAR 29 2019 0914
Jeff Lucas /CHPRC		MAR 29 2019 1400	FEDEX		
FED EX			Nicholas Ross		3-30-19 1030

Matrix *

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

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

Printed On 2/27/2019 FSR ID = FSR76662 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-012-092 Page 1 of 1

Collector: Malcom Chunn CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-012	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, March 2019 SL33514-1	**Logbook No.:** HNF-N-506-10612/92	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3N7B5	N		MAR 29 2019	0922	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3N7B5	N	W	↓	↓	1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B3N7B5	N		MAR 29 2019	0922	1x500-mL G/P	SE79_SEP_IE_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Received By
Malcom Chunn CHPRC — Print First and Last Name / Signature / MAR 29 2019 1130 Date/Time	Lesly Wall /CHPRC — Print First and Last Name / Signature / MAR 29 2019 1130 Date/Time
Lesly Wall /CHPRC — Print First and Last Name / Signature / MAR 29 2019 1400 Date/Time	FEDEX — Print First and Last Name / Signature / Date/Time
Print First and Last Name / FED EX / Date/Time	Nicholas Hess — Print First and Last Name / Signature / 3-30-19/1030 Date/Time
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 Liquid
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 2/27/2019 FSR ID = FSR76664 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S19-003-374 Page 1 of 1

Collector: Malcom Chunn CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S19-003	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERC, March 2019 SL33514-1	**Logbook No.:** HNF-N-506 -10e192	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3NB31	N		MAR 29 2019	0922	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3NB31	N	W	↓	↓	1x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2

Relinquished By: Malcom Chunn CHPRC — MAR 29 2019 1130 (Print First and Last Name / Signature / Date/Time)	Received By: Lesly Wall /CHPRC — MAR 29 2019 1130 (Print First and Last Name / Signature / Date/Time)	Matrix *
Relinquished By: Lesly Wall /CHPRC — MAR 29 2019 1400 (Print First and Last Name / Signature / Date/Time)	Received By: FEDEX (Print First and Last Name / Signature / Date/Time)	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air; DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: FED EX (Print First and Last Name / Signature / Date/Time)	Received By: Nicholas Press 5-30-19 1030 (Print First and Last Name / Signature / Date/Time)	
Relinquished By: (Print First and Last Name / Signature / Date/Time)	Received By: (Print First and Last Name / Signature / Date/Time)	

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

Printed On 2/27/2019 — FSR ID = FSR76664 — A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-012-091 Page 1 of 1

Collector: Malcom Chunn CHPRC SL33514-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650	
SAF No.: I19-012	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071	
Project Title: AEA, March 2019	**Logbook No.:** HNF-N-506 - 10692	**Ice Chest No.:** GWS-534	
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 774839764850	
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 10784	

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
B3N773	N		MAR 2 9 2019	1110	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3N773	N	W	↓	↓	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3N773	N	W	MAR 2 9 2019	1110	1x4-L G/P	I129LL_SEP_LSC_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
Malcom Chunn CHPRC		MAR 2 9 2019 1130	Lesly Wall /CHPRC		MAR 2 9 2019 1130
Lesly Wall /CHPRC		MAR 2 9 2019 1400	FEDEX		
	FEDEX		Nicholas Nicholson		3-30-19/1030

Matrix *

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

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

Printed On 2/27/2019 FSR ID = FSR76668 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	100 LBS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S19-003-331
			Page 1 of 1

Collector: Kathy Turner /CHPRC SL33514-1	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S19-003	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: CERC, March 2019	**Logbook No.:** HNF-N-506-107	**Ice Chest No.:** GWS-534
Shipped To (Lab): TestAmerica St. Louis	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7748 3976 4850
Protocol: CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 10784

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
B3NC77	N	W	3/29/19	1019	1x1-L P	9310_ALPHABETA_GPC: Gross Alpha	6 Months	HNO3 to pH <2

Relinquished By: Kathy Turner /CHPRC — Kathy Turner — MAR 29 2019 1110	Received By: Jeff Lucas /CHPRC — MAR 29 2019 1110	Matrix *: S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: Jeff Lucas /CHPRC — MAR 29 2019 1405	Received By: FEDEX	
Relinquished By: FED EX	Received By: Nicholas Ross — 3-30-19/1030	
Relinquished By:	Received By:	

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

Printed On 2/27/2019 — FSR ID = FSR76726 — A-6004-842 (REV 3)

April 3,2019

Dear Customer:

The following is the proof-of-delivery for tracking number **774839764996**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Shipping/Receiving
Signed for by:	A.PRESS	**Delivery location:**	EARTH CITY, MO
Service type:	FedEx Priority Overnight	**Delivery date:**	Mar 30, 2019 10:26
Special Handling:	Saturday Delivery 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:	774839764996	**Ship date:**	Mar 29, 2019
		Weight:	54.0 lbs/24.5 kg

Recipient:	**Shipper:**
EARTH CITY, MO US	Richland, WA US
Reference	ptr#10784

Thank you for choosing FedEx.

FedEx

April 3,2019

Dear Customer:

The following is the proof-of-delivery for tracking number **774839764850**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Shipping/Receiving
Signed for by:	A.PRESS	**Delivery location:**	EARTH CITY, MO
Service type:	FedEx Priority Overnight	**Delivery date:**	Mar 30, 2019 10:26
Special Handling:	Saturday Delivery		
	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:	774839764850	**Ship date:**	Mar 29, 2019
		Weight:	100.0 lbs/45.4 kg

Recipient:	**Shipper:**
EARTH CITY, MO US	Richland, WA US
Reference	ptr#10784

Thank you for choosing FedEx.

Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL
SR-03-RC	Total Beta Strontium (GFPC)	DOE	TAL SL
ST-RC-0079	Selenium-79 (LSC)	TAL-STL	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
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EERF = EERF
EPA = US Environmental Protection Agency
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

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: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Assest ID
160-33514-2	B3MJF0	Water	03/29/19 11:31	03/30/19 10:30	
160-33514-3	B3N368	Water	03/29/19 09:42	03/30/19 10:30	
160-33514-4	B3NC59	Water	03/29/19 12:26	03/30/19 10:30	
160-33514-5	B3NCB0	Water	03/29/19 08:14	03/30/19 10:30	
160-33514-6	B3NC89	Water	03/29/19 07:50	03/30/19 10:30	
160-33514-7	B3NC87	Water	03/29/19 07:50	03/30/19 10:30	
160-33514-8	B3NCN3	Water	03/29/19 07:42	03/30/19 10:30	
160-33514-9	B3NCN2	Water	03/29/19 07:42	03/30/19 10:30	
160-33514-10	B3N781	Water	03/29/19 07:42	03/30/19 10:30	
160-33514-11	B3N378	Water	03/29/19 09:11	03/30/19 10:30	
160-33514-12	B3N782	Water	03/29/19 07:42	03/30/19 10:30	
160-33514-13	B3N7B5	Water	03/29/19 09:22	03/30/19 10:30	
160-33514-14	B3NB31	Water	03/29/19 09:22	03/30/19 10:30	
160-33514-15	B3N773	Water	03/29/19 11:10	03/30/19 10:30	
160-33514-16	B3NC77	Water	03/29/19 10:19	03/30/19 10:30	

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 6010D - Metals (ICP)

Client Sample ID: B3NC87
Date Collected: 03/29/19 07:50
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	50.0	25.0	ug/L		04/04/19 15:57	04/10/19 21:56	1
Calcium	**46700**		1000	300	ug/L		04/04/19 15:57	04/10/19 21:56	1
Iron	**156**		100	30.0	ug/L		04/04/19 15:57	04/10/19 21:56	1
Magnesium	**9990**		1000	300	ug/L		04/04/19 15:57	04/10/19 21:56	1
Potassium	**5480**		5000	1500	ug/L		04/04/19 15:57	04/10/19 21:56	1
Sodium	**16400**		1000	300	ug/L		04/04/19 15:57	04/10/19 21:56	1
Vanadium	**6.5**	**B**	50.0	4.0	ug/L		04/04/19 15:57	04/10/19 21:56	1

Method: 6020B - Metals (ICP/MS)

Client Sample ID: B3NC87
Date Collected: 03/29/19 07:50
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	**33.8**	**D**	1.0	0.40	ug/L		04/04/19 15:59	04/17/19 00:41	2

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

Client Sample ID: B3NC89
Date Collected: 03/29/19 07:50
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	20.0	U D	50.0	20.0	ug/L		04/04/19 15:59	04/05/19 18:21	2
Uranium	**21.0**	**D**	1.0	0.40	ug/L		04/04/19 15:59	04/05/19 18:21	2
Cobalt	0.90	U D	2.0	0.90	ug/L		04/04/19 15:59	04/05/19 18:21	2
Manganese	**2.5**	**B D**	4.0	2.0	ug/L		04/04/19 15:59	04/05/19 18:21	2
Nickel	2.0	U D	5.0	2.0	ug/L		04/04/19 15:59	04/05/19 18:21	2
Antimony	2.0	U D	5.0	2.0	ug/L		04/04/19 15:59	04/05/19 18:21	2
Thallium	0.90	U D	2.0	0.90	ug/L		04/04/19 15:59	04/05/19 18:21	2
Zinc	7.5	U D	20.0	7.5	ug/L		04/04/19 15:59	04/05/19 18:21	2

Method: 906.0 - Tritium, Total (LSC)

Client Sample ID: B3MJF0
Date Collected: 03/29/19 11:31
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	**21600**		927	2120	500	315	pCi/L	04/18/19 14:31	04/18/19 22:16	1

Client Sample ID: B3NC59
Date Collected: 03/29/19 12:26
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	**15400**		788	1570	500	314	pCi/L	04/18/19 14:31	04/18/19 22:39	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 906.0 - Tritium, Total (LSC)

Client Sample ID: B3N781
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	1030		265	280	500	316	pCi/L	04/18/19 14:31	04/18/19 23:01	1

Client Sample ID: B3N378
Date Collected: 03/29/19 09:11
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	1830		318	357	500	316	pCi/L	04/18/19 14:31	04/18/19 23:24	1

Client Sample ID: B3N782
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	992		262	276	500	316	pCi/L	04/18/19 14:31	04/18/19 23:47	1

Client Sample ID: B3NB31
Date Collected: 03/29/19 09:22
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-14
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	6370		527	769	500	318	pCi/L	04/18/19 14:31	04/19/19 00:09	1

Client Sample ID: B3N773
Date Collected: 03/29/19 11:10
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-15
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	487		223	227	500	319	pCi/L	04/18/19 14:31	04/19/19 00:32	1

Method: 9310 - Gross Alpha / Beta (GFPC)

Client Sample ID: B3MJF0
Date Collected: 03/29/19 11:31
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	5.61		2.76	2.83	3.00	3.26	pCi/L	04/24/19 11:50	05/07/19 22:02	1
Gross Beta	6.94		1.59	1.74	4.00	1.77	pCi/L	04/24/19 11:50	05/07/19 22:02	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 9310 - Gross Alpha / Beta (GFPC)

Client Sample ID: B3NCB0
Date Collected: 03/29/19 08:14
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	**8.47**		2.69	2.86	3.00	2.53	pCi/L	04/24/19 11:50	05/07/19 22:02	1

Client Sample ID: B3NB31
Date Collected: 03/29/19 09:22
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-14
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	**55.5**		8.41	10.5	3.00	4.58	pCi/L	04/24/19 11:50	05/07/19 22:02	1
Gross Beta	**404**		10.5	41.7	4.00	3.31	pCi/L	04/24/19 11:50	05/07/19 22:02	1

Client Sample ID: B3NC77
Date Collected: 03/29/19 10:19
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-16
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	**13.8**		3.38	3.73	3.00	2.65	pCi/L	04/24/19 11:50	05/07/19 22:02	1

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

Client Sample ID: B3NCN3
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	3.24	U	7.39	7.40	20.0	12.3	pCi/L	04/24/19 07:51	04/25/19 00:55	1

Client Sample ID: B3NCN2
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-1.7	U	7.25	7.25	20.0	12.4	pCi/L	04/24/19 07:51	04/25/19 01:57	1

Client Sample ID: B3N7B5
Date Collected: 03/29/19 09:22
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-13
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	9.43	U	7.62	7.69	20.0	12.4	pCi/L	04/24/19 07:51	04/25/19 02:59	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

Client Sample ID: B3N781
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.80	U	6.41	6.42	15.0	10.8	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Cobalt-60	2.57	U	2.24	2.25		10.6	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Antimony-125	11.9	U	16.9	16.9		18.3	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Cesium-134	4.26	U	2.93	2.96		12.0	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Europium-152	12.3	U	28.0	28.0		47.5	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Europium-154	5.78	U	11.6	11.6		14.9	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Europium-155	3.18	U	32.6	32.6		54.3	pCi/L	04/01/19 02:04	04/01/19 04:55	1
Potassium-40	-74	U	112	113		145	pCi/L	04/01/19 02:04	04/01/19 04:55	1

Client Sample ID: B3N782
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-3.5	U	6.38	6.39	15.0	10.7	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Cobalt-60	-0.29	U	1.35	1.36		9.21	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Antimony-125	15.7	U	12.5	12.6		17.1	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Cesium-134	3.91	U	5.80	5.81		11.9	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Europium-152	13.8	U	8.82	8.95		23.6	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Europium-154	1.94	U	4.94	4.95		17.3	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Europium-155	-9.0	U	20.7	20.8		34.6	pCi/L	04/01/19 02:04	04/01/19 04:56	1
Potassium-40	-19	U	69.4	69.4		108	pCi/L	04/01/19 02:04	04/01/19 04:56	1

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

Client Sample ID: B3NC59
Date Collected: 03/29/19 12:26
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0626	U	0.0745	0.0746	2.00	0.123	pCi/L	04/05/19 13:21	04/16/19 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*79.2*		*40 - 110*	*04/05/19 13:21*	*04/16/19 09:20*	*1*

Client Sample ID: B3N781
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0903	U	0.0843	0.0845	2.00	0.136	pCi/L	04/05/19 13:21	04/16/19 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*80.0*		*40 - 110*	*04/05/19 13:21*	*04/16/19 09:20*	*1*

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

Client Sample ID: B3N782
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0470	U	0.0770	0.0771	2.00	0.130	pCi/L	04/05/19 13:21	04/16/19 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*81.6*		*40 - 110*	*04/05/19 13:21*	*04/16/19 09:20*	*1*

Client Sample ID: B3N7B5
Date Collected: 03/29/19 09:22
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-13
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0952	U	0.0826	0.0829	2.00	0.132	pCi/L	04/05/19 13:21	04/16/19 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*76.4*		*40 - 110*	*04/05/19 13:21*	*04/16/19 09:20*	*1*

Client Sample ID: B3N773
Date Collected: 03/29/19 11:10
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-15
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00841	U	0.0683	0.0683	2.00	0.122	pCi/L	04/05/19 13:21	04/16/19 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*79.8*		*40 - 110*	*04/05/19 13:21*	*04/16/19 09:20*	*1*

Method: ST-RC-0079 - Selenium-79 (LSC)

Client Sample ID: B3NCN3
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Se-79	1.16	U	8.78	8.78	50.0	15.0	pCi/L	04/08/19 15:22	04/17/19 08:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Se	*86.5*		*40 - 110*	*04/08/19 15:22*	*04/17/19 08:59*	*1*

Client Sample ID: B3NCN2
Date Collected: 03/29/19 07:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Se-79	-2.4	U	8.22	8.22	50.0	14.4	pCi/L	04/08/19 15:22	04/17/19 10:05	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Se	*90.5*		*40 - 110*	*04/08/19 15:22*	*04/17/19 10:05*	*1*

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: ST-RC-0079 - Selenium-79 (LSC)

Client Sample ID: B3N7B5
Date Collected: 03/29/19 09:22
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-13
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Se-79	6.49	U	9.16	9.19	50.0	15.2	pCi/L	04/08/19 15:22	04/17/19 11:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Se	*85.5*		*40 - 110*	*04/08/19 15:22*	*04/17/19 11:11*	*1*

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

Client Sample ID: B3N368
Date Collected: 03/29/19 09:42
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	**257**		4.90	25.1	3.00	2.13	pCi/L	04/03/19 12:42	04/08/19 02:50	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*98.2*		*30 - 105*	*04/03/19 12:42*	*04/08/19 02:50*	*1*

Client Sample ID: B3N378
Date Collected: 03/29/19 09:11
Date Received: 03/30/19 10:30

Lab Sample ID: 160-33514-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	**12200**		183	1190	3.00	10.6	pCi/L	04/03/19 12:42	04/08/19 03:40	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*91.9*		*30 - 105*	*04/03/19 12:42*	*04/08/19 03:40*	*1*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 160-422770/1-A
Matrix: Water
Analysis Batch: 423276

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422770

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	50.0	25.0	ug/L		04/04/19 15:57	04/10/19 20:34	1
Calcium	300	U	1000	300	ug/L		04/04/19 15:57	04/10/19 20:34	1
Iron	30.0	U	100	30.0	ug/L		04/04/19 15:57	04/10/19 20:34	1
Magnesium	300	U	1000	300	ug/L		04/04/19 15:57	04/10/19 20:34	1
Potassium	1500	U	5000	1500	ug/L		04/04/19 15:57	04/10/19 20:34	1
Sodium	300	U	1000	300	ug/L		04/04/19 15:57	04/10/19 20:34	1
Vanadium	4.0	U	50.0	4.0	ug/L		04/04/19 15:57	04/10/19 20:34	1

Lab Sample ID: LCS 160-422770/2-A
Matrix: Water
Analysis Batch: 423276

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	200	197.3		ug/L		99	80 - 120
Calcium	10000	9551		ug/L		95	80 - 120
Iron	10000	10800		ug/L		108	80 - 120
Magnesium	10000	9742		ug/L		97	80 - 120
Potassium	10000	9609		ug/L		96	80 - 120
Sodium	10000	9814		ug/L		98	80 - 120
Vanadium	1000	1005		ug/L		100	80 - 120

Lab Sample ID: 160-33487-A-2-B MS
Matrix: Water
Analysis Batch: 423276

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 422770

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	25.0	U	200	191.8		ug/L		96	75 - 125
Calcium	300	U	10000	9530		ug/L		95	75 - 125
Iron	30.0	U	10000	10760		ug/L		107	75 - 125
Magnesium	300	U	10000	9721		ug/L		97	75 - 125
Potassium	1500	U	10000	9636		ug/L		96	75 - 125
Sodium	300	U	10000	9787		ug/L		98	75 - 125
Vanadium	4.0	U	1000	994.9		ug/L		99	75 - 125

Lab Sample ID: 160-33487-A-2-C MSD
Matrix: Water
Analysis Batch: 423276

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 422770

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	25.0	U	200	193.3		ug/L		97	75 - 125	1	20
Calcium	300	U	10000	9567		ug/L		96	75 - 125	0	20
Iron	30.0	U	10000	10760		ug/L		107	75 - 125	0	20
Magnesium	300	U	10000	9714		ug/L		97	75 - 125	0	20
Potassium	1500	U	10000	9549		ug/L		95	75 - 125	1	20
Sodium	300	U	10000	9807		ug/L		98	75 - 125	0	20
Vanadium	4.0	U	1000	1002		ug/L		100	75 - 125	1	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 160-422771/1-A
Matrix: Water
Analysis Batch: 424222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422771

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	0.40	U D	1.0	0.40	ug/L		04/04/19 15:59	04/16/19 23:07	2

Lab Sample ID: LCS 160-422771/2-A
Matrix: Water
Analysis Batch: 424222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	1000	1085	D	ug/L		108	80 - 120

Lab Sample ID: MB 160-422772/1-A
Matrix: Water
Analysis Batch: 423006

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422772

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	20.0	U D	50.0	20.0	ug/L		04/04/19 15:59	04/05/19 17:17	2
Uranium	0.40	U D	1.0	0.40	ug/L		04/04/19 15:59	04/05/19 17:17	2
Cobalt	0.90	U D	2.0	0.90	ug/L		04/04/19 15:59	04/05/19 17:17	2
Manganese	2.0	U D	4.0	2.0	ug/L		04/04/19 15:59	04/05/19 17:17	2
Nickel	2.0	U D	5.0	2.0	ug/L		04/04/19 15:59	04/05/19 17:17	2
Antimony	2.22	B D	5.0	2.0	ug/L		04/04/19 15:59	04/05/19 17:17	2
Thallium	0.90	U D	2.0	0.90	ug/L		04/04/19 15:59	04/05/19 17:17	2
Zinc	7.5	U D	20.0	7.5	ug/L		04/04/19 15:59	04/05/19 17:17	2

Lab Sample ID: LCS 160-422772/2-A
Matrix: Water
Analysis Batch: 423006

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10000	9186	D	ug/L		92	80 - 120
Uranium	1000	967.6	D	ug/L		97	80 - 120
Cobalt	1000	984.5	D	ug/L		98	80 - 120
Manganese	1000	959.9	D	ug/L		96	80 - 120
Nickel	1000	949.9	D	ug/L		95	80 - 120
Antimony	501	490.3	D	ug/L		98	80 - 120
Thallium	200	198.8	D	ug/L		99	80 - 120
Zinc	1000	918.8	D	ug/L		92	80 - 120

Lab Sample ID: 160-33432-A-4-B MS
Matrix: Water
Analysis Batch: 423006

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 422772

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	20.0	U D	10000	9744	D	ug/L		97	75 - 125
Uranium	1.1	D	1000	977.3	D	ug/L		98	75 - 125
Cobalt	0.90	U D	1000	996.4	D	ug/L		100	75 - 125
Manganese	5.7	D	1000	980.8	D	ug/L		97	75 - 125
Nickel	2.0	U D	1000	964.6	D	ug/L		96	75 - 125
Antimony	2.0	B D C	501	493.6	D	ug/L		98	75 - 125
Thallium	0.90	U D	200	201.7	D	ug/L		101	75 - 125

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

Lab Sample ID: 160-33432-A-4-B MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 423006 — **Prep Batch: 422772**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	7.5	U D	1000	939.3	D	ug/L		94	75 - 125

Lab Sample ID: 160-33432-A-4-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 423006 — **Prep Batch: 422772**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	20.0	U D	10000	9663	D	ug/L		97	75 - 125	1	20
Uranium	1.1	D	1000	967.7	D	ug/L		97	75 - 125	1	20
Cobalt	0.90	U D	1000	994.8	D	ug/L		99	75 - 125	0	20
Manganese	5.7	D	1000	998.9	D	ug/L		99	75 - 125	2	20
Nickel	2.0	U D	1000	962.1	D	ug/L		96	75 - 125	0	20
Antimony	2.0	B D C	501	491.7	D	ug/L		98	75 - 125	0	20
Thallium	0.90	U D	200	203.5	D	ug/L		102	75 - 125	1	20
Zinc	7.5	U D	1000	944.9	D	ug/L		95	75 - 125	1	20

Lab Sample ID: 160-33487-A-2-E MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 424222 — **Prep Batch: 422771**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	0.40	U D	1000	1068	D	ug/L		107	75 - 125

Lab Sample ID: 160-33487-A-2-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 424222 — **Prep Batch: 422771**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Uranium	0.40	U D	1000	1062	D	ug/L		106	75 - 125	1	20

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-424373/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 424410 — **Prep Batch: 424373**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	100.0	U	184	184	500	314	pCi/L	04/18/19 14:31	04/18/19 18:52	1

Lab Sample ID: LCS 160-424373/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 424410 — **Prep Batch: 424373**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2610	2884		454	500	318	pCi/L	111	80 - 120

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: 160-33487-A-8-C MS
Matrix: Water
Analysis Batch: 424410

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 424373

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	91.0	U	2620	2834		448	500	314	pCi/L	105	75 - 125

Lab Sample ID: 160-33427-A-1-C DU
Matrix: Water
Analysis Batch: 424410

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 424373

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Tritium	47800		50060		4620	500	315	pCi/L	5	20

Method: 9310 - Gross Alpha / Beta (GFPC)

Lab Sample ID: MB 160-425436/1-A
Matrix: Water
Analysis Batch: 427422

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425436

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.455	U	0.427	0.430	3.00	1.04	pCi/L	04/24/19 11:50	05/07/19 22:01	1
Gross Beta	0.356	U	0.462	0.463	4.00	0.768	pCi/L	04/24/19 11:50	05/07/19 22:01	1

Lab Sample ID: LCS 160-425436/2-A
Matrix: Water
Analysis Batch: 427422

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425436

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	50.9	44.76		6.75	3.00	1.82	pCi/L	88	80 - 120

Lab Sample ID: LCSB 160-425436/3-A
Matrix: Water
Analysis Batch: 427422

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425436

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	86.4	84.71		9.00	4.00	0.928	pCi/L	98	80 - 120

Lab Sample ID: 160-33640-A-6-D MS
Matrix: Water
Analysis Batch: 428029

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 425436

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	11.6		94.7	103.0		14.8	3.00	3.53	pCi/L	97	60 - 140

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Method: 9310 - Gross Alpha / Beta (GFPC) (Continued)

Lab Sample ID: 160-33640-A-6-E MSBT
Matrix: Water
Analysis Batch: 427695

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 425436

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	522		161	657.6		66.8	4.00	2.15	pCi/L	84	60 - 140

Lab Sample ID: 160-33640-A-6-C DU
Matrix: Water
Analysis Batch: 427422

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 425436

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Gross Alpha	11.6		7.731	y	3.66	3.00	4.61	pCi/L	40	20
Gross Beta	522		500.3		51.0	4.00	2.16	pCi/L	4	20

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

Lab Sample ID: MB 160-425401/1-A
Matrix: Water
Analysis Batch: 425562

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425401

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-5.41	U	7.10	7.13	20.0	12.4	pCi/L	04/24/19 07:51	04/24/19 18:43	1

Lab Sample ID: LCS 160-425401/2-A
Matrix: Water
Analysis Batch: 425562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425401

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Carbon-14	1130	1106		122	20.0	12.2	pCi/L	98	80 - 120

Lab Sample ID: 160-33428-A-19-D MS
Matrix: Water
Analysis Batch: 425562

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 425401

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Carbon-14	-3.5	U	1130	1106		122	20.0	12.2	pCi/L	98	75 - 125

Lab Sample ID: 160-33428-A-19-C DU
Matrix: Water
Analysis Batch: 425562

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 425401

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Carbon-14	-3.5	U	-0.960	U y	7.27	20.0	12.4	pCi/L	115	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

Lab Sample ID: MB 160-421963/1-A
Matrix: Water
Analysis Batch: 421964

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 421963

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.632	U	5.89	5.89	15.0	10.2	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Cobalt-60	4.607		2.91	2.95		3.40	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Antimony-125	14.86	U	10.1	10.2		20.7	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Cesium-134	2.339	U	2.67	2.68		12.8	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Europium-152	6.024	U	10.7	10.7		18.9	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Europium-154	6.330	U	12.6	12.6		13.8	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Europium-155	-4.60	U	18.7	18.7		31.4	pCi/L	04/01/19 02:04	04/01/19 04:53	1
Potassium-40	41.13	U	57.1	57.3		86.0	pCi/L	04/01/19 02:04	04/01/19 04:53	1

Lab Sample ID: LCS 160-421963/2-A
Matrix: Water
Analysis Batch: 421965

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 421963

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132800		15300		375	pCi/L	98	80 - 120
Cesium-137	44800	43310		4340	15.0	114	pCi/L	97	80 - 120
Cobalt-60	30100	29350		2900		72.7	pCi/L	98	80 - 120

Lab Sample ID: 160-33514-10 DU
Matrix: Water
Analysis Batch: 421964

Client Sample ID: B3N781
Prep Type: Total/NA
Prep Batch: 421963

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Cesium-137	2.80	U	0.396	U y	6.41	15.0	11.3	pCi/L	150	30
Cobalt-60	2.57	U	1.996	U	7.11		8.26	pCi/L	25	30
Antimony-125	11.9	U	3.413	U y	10.2		24.8	pCi/L	111	30
Cesium-134	4.26	U	-4.25	U y	9.22		15.6	pCi/L	1020	30
Europium-152	12.3	U	6.225	U y	12.3		21.0	pCi/L	46 65	30
Europium-154	5.78	U	6.112	U	10.4		14.7	pCi/L	6	30
Europium-155	3.18	U	6.028	U y	12.5		28.7	pCi/L	62	30
Potassium-40	-74	U	-52.7	U y	113		129	pCi/L	34	30

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

Lab Sample ID: MB 160-422824/16-A
Matrix: Water
Analysis Batch: 424032

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422824

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.0581	U	0.0766	0.0767	2.00	0.147	pCi/L	04/05/19 13:21	04/16/19 09:20	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*76.9*		*40 - 110*	*04/05/19 13:21*	*04/16/19 09:20*	*1*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

Lab Sample ID: LCS 160-422824/1-A
Matrix: Water
Analysis Batch: 424032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422824

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Strontium 89/90			8.08	8.329		0.687	2.00	0.136	pCi/L	103	80 - 120		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Sr Carrier	*80.2*		*40 - 110*

Lab Sample ID: LCSD 160-422824/2-A
Matrix: Water
Analysis Batch: 424264

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 422824

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Strontium 89/90			8.08	8.269		0.677	2.00	0.130	pCi/L	102	80 - 120	1	20

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Sr Carrier	*82.3*		*40 - 110*

Method: ST-RC-0079 - Selenium-79 (LSC)

Lab Sample ID: MB 160-423069/1-A
Matrix: Water
Analysis Batch: 424308

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423069

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Se-79	5.643	U	8.80	8.82	50.0	14.7	pCi/L	04/08/19 15:22	04/16/19 19:44	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Se	*88.7*		*40 - 110*	*04/08/19 15:22*	*04/16/19 19:44*	*1*

Lab Sample ID: 160-33265-A-3-C DU
Matrix: Water
Analysis Batch: 424308

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 423069

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Se-79	9.80	U		5.392	U y	8.15	50.0	13.5	pCi/L			58	20

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Se	*96.0*		*40 - 110*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

Lab Sample ID: MB 160-422501/1-A
Matrix: Water
Analysis Batch: 423090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422501

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	-1.25	U	1.13	1.13	3.00	1.98	pCi/L	04/03/19 12:42	04/07/19 21:26	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*103*		*30 - 105*	*04/03/19 12:42*	*04/07/19 21:26*	*1*

Lab Sample ID: LCS 160-422501/2-A
Matrix: Water
Analysis Batch: 423090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422501

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Technetium-99			30.9	28.91		3.38	3.00	1.98	pCi/L	94	80 - 120		

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

Lab Sample ID: LCSD 160-422501/3-A
Matrix: Water
Analysis Batch: 423090

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 422501

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RPD	RPD Limit
Technetium-99			30.9	30.09		3.51	3.00	2.04	pCi/L	97	80 - 120	4	20

Tracer	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Tc-99m	*100*		*30 - 105*

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Metals

Prep Batch: 422770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-7	B3NC87	Total/NA	Water	3010A	
MB 160-422770/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-422770/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-33487-A-2-B MS	Matrix Spike	Dissolved	Water	3010A	
160-33487-A-2-C MSD	Matrix Spike Duplicate	Dissolved	Water	3010A	

Prep Batch: 422771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-7	B3NC87	Total/NA	Water	3010A	
MB 160-422771/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-422771/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-33487-A-2-E MS	Matrix Spike	Dissolved	Water	3010A	
160-33487-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	3010A	

Prep Batch: 422772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-6	B3NC89	Dissolved	Water	3010A	
MB 160-422772/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-422772/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-33432-A-4-B MS	Matrix Spike	Total/NA	Water	3010A	
160-33432-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	3010A	

Analysis Batch: 423006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-6	B3NC89	Dissolved	Water	6020B	422772
MB 160-422772/1-A	Method Blank	Total/NA	Water	6020B	422772
LCS 160-422772/2-A	Lab Control Sample	Total/NA	Water	6020B	422772
160-33432-A-4-B MS	Matrix Spike	Total/NA	Water	6020B	422772
160-33432-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	6020B	422772

Analysis Batch: 423276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-7	B3NC87	Total/NA	Water	6010D	422770
MB 160-422770/1-A	Method Blank	Total/NA	Water	6010D	422770
LCS 160-422770/2-A	Lab Control Sample	Total/NA	Water	6010D	422770
160-33487-A-2-B MS	Matrix Spike	Dissolved	Water	6010D	422770
160-33487-A-2-C MSD	Matrix Spike Duplicate	Dissolved	Water	6010D	422770

Analysis Batch: 424222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-7	B3NC87	Total/NA	Water	6020B	422771
MB 160-422771/1-A	Method Blank	Total/NA	Water	6020B	422771
LCS 160-422771/2-A	Lab Control Sample	Total/NA	Water	6020B	422771
160-33487-A-2-E MS	Matrix Spike	Dissolved	Water	6020B	422771
160-33487-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	6020B	422771

Rad

Prep Batch: 421963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-10	B3N781	Total/NA	Water	Fill_Geo-0	

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Rad (Continued)

Prep Batch: 421963 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-12	B3N782	Total/NA	Water	Fill_Geo-0	
MB 160-421963/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-421963/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
160-33514-10 DU	B3N781	Total/NA	Water	Fill_Geo-0	

Prep Batch: 422501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-3	B3N368	Total/NA	Water	Ext_Chrom_LSC	
160-33514-11	B3N378	Total/NA	Water	Ext_Chrom_LSC	
MB 160-422501/1-A	Method Blank	Total/NA	Water	Ext_Chrom_LSC	
LCS 160-422501/2-A	Lab Control Sample	Total/NA	Water	Ext_Chrom_LSC	
LCSD 160-422501/3-A	Lab Control Sample Dup	Total/NA	Water	Ext_Chrom_LSC	

Prep Batch: 422824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-4	B3NC59	Total/NA	Water	PrecSep_0	
160-33514-10	B3N781	Total/NA	Water	PrecSep_0	
160-33514-12	B3N782	Total/NA	Water	PrecSep_0	
160-33514-13	B3N7B5	Total/NA	Water	PrecSep_0	
160-33514-15	B3N773	Total/NA	Water	PrecSep_0	
MB 160-422824/16-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-422824/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-422824/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 423069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-8	B3NCN3	Total/NA	Water	Ext_Chrom_LSC	
160-33514-9	B3NCN2	Total/NA	Water	Ext_Chrom_LSC	
160-33514-13	B3N7B5	Total/NA	Water	Ext_Chrom_LSC	
MB 160-423069/1-A	Method Blank	Total/NA	Water	Ext_Chrom_LSC	
160-33265-A-3-C DU	Duplicate	Total/NA	Water	Ext_Chrom_LSC	

Prep Batch: 424373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-2	B3MJF0	Total/NA	Water	LSC_Dist_Susp	
160-33514-4	B3NC59	Total/NA	Water	LSC_Dist_Susp	
160-33514-10	B3N781	Total/NA	Water	LSC_Dist_Susp	
160-33514-11	B3N378	Total/NA	Water	LSC_Dist_Susp	
160-33514-12	B3N782	Total/NA	Water	LSC_Dist_Susp	
160-33514-14	B3NB31	Total/NA	Water	LSC_Dist_Susp	
160-33514-15	B3N773	Total/NA	Water	LSC_Dist_Susp	
MB 160-424373/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-424373/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-33487-A-8-C MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-33427-A-1-C DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 425401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-8	B3NCN3	Total/NA	Water	LSC_Dist_Susp	
160-33514-9	B3NCN2	Total/NA	Water	LSC_Dist_Susp	
160-33514-13	B3N7B5	Total/NA	Water	LSC_Dist_Susp	

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

Rad (Continued)

Prep Batch: 425401 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-425401/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-425401/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-33428-A-19-D MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-33428-A-19-C DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 425436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-33514-2	B3MJF0	Total/NA	Water	Evaporation	
160-33514-5	B3NCB0	Total/NA	Water	Evaporation	
160-33514-14	B3NB31	Total/NA	Water	Evaporation	
160-33514-16	B3NC77	Total/NA	Water	Evaporation	
MB 160-425436/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-425436/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-425436/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
160-33640-A-6-D MS	Matrix Spike	Total/NA	Water	Evaporation	
160-33640-A-6-E MSBT	Matrix Spike	Total/NA	Water	Evaporation	
160-33640-A-6-C DU	Duplicate	Total/NA	Water	Evaporation	

Tracer/Carrier Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S19-003/I19-008/I19-009/I19-012/I19-011

Job ID: 160-33514-1
SDG: SL33514-1

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

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)
160-33514-4	B3NC59	79.2
160-33514-10	B3N781	80.0
160-33514-12	B3N782	81.6
160-33514-13	B3N7B5	76.4
160-33514-15	B3N773	79.8
LCS 160-422824/1-A	Lab Control Sample	80.2
LCSD 160-422824/2-A	Lab Control Sample Dup	82.3
MB 160-422824/16-A	Method Blank	76.9

Tracer/Carrier Legend

Sr Carrier = Sr Carrier

Method: ST-RC-0079 - Selenium-79 (LSC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Se (40-110)
160-33265-A-3-C DU	Duplicate	96.0
160-33514-8	B3NCN3	86.5
160-33514-9	B3NCN2	90.5
160-33514-13	B3N7B5	85.5
MB 160-423069/1-A	Method Blank	88.7

Tracer/Carrier Legend

Se = Se

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)
160-33514-3	B3N368	98.2
160-33514-11	B3N378	91.9
LCS 160-422501/2-A	Lab Control Sample	104
LCSD 160-422501/3-A	Lab Control Sample Dup	100
MB 160-422501/1-A	Method Blank	103

Tracer/Carrier Legend

Tc-99m = Tc-99m