

DECEMBER 19, 2012

WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352



December 19, 2012

Scot Fitzgerald
CH2M-HILL PRC
PO Box 1600
Richland, WA 99352

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF121493

Reference: (1) SOW, Mod 2, #36587, Release 3
(2) MSC-SD-CD-QAPP-017, current version, Waste Sampling & Characterization Facility Quality Assurance Program Plan

This letter contains the following information for sample delivery group WSCF121493

- * Cover Sheet (Attachment 1)
- * Narrative (Attachment 2)
- * Analytical Results (Attachment 3)
- * Sample Receipt Information (Attachment 4)

Very truly yours,

A handwritten signature in black ink, appearing to read "Joseph Hale", is positioned above the typed name.

Electronically signed by Joseph Hale

For Lab Manager, Dan T. Smith

WSCF Analytical Lab

(509) 373-4804

Attachments 4

CC: w/Attachments

File/LB

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF121493
 Data Deliverable Date 12/26/12

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
S13-012	B2MYF1	121493001	WATER	11/20/12	11/20/12
S13-012	B2MYD8	121493002	WATER	11/20/12	11/20/12
S13-012	B2MY20	121493003	WATER	11/20/12	11/20/12
S13-012	B2MY44	121493004	WATER	11/20/12	11/20/12
S13-012	B2MY17	121493005	WATER	11/20/12	11/20/12
S13-012	B2MY41	121493006	WATER	11/20/12	11/20/12
S13-012	B2MY30	121493007	WATER	11/20/12	11/20/12
S13-012	B2MY27	121493008	WATER	11/20/12	11/20/12
S13-012	B2MY23	121493009	WATER	11/20/12	11/20/12

ATTACHMENT 2

NARRATIVE

Consisting of 3 pages
Including cover page

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Master Contract 39818, Revision 3, "Laboratory Analytical Services to CHPRC Soil and Groundwater Remediation Project."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, C, D, J and U) may be applicable to this report, as appropriate.

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **C** – Analyte was detected in the blank and was evaluated. Affected sample results in the batch were C flagged (applies to inorganic and wet chemical analyses).
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **B (organic analyses)** – Analyte was detected in the blank and was evaluated. Affected sample results in the batch were B flagged.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Attachment 2
Narrative
WSCF121493

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Zinc and Sodium were detected in the Blank and evaluated.
- All other applicable QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Arsenic was detected in the Blank and evaluated.
- All other applicable QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike (Matrix Spikes apply only to Tritium), Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

Gross Alpha / Gross Beta:

- All applicable QC controls are within the established limits.

Tritium:

- All applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 37 pages
Including cover page

DECEMBER 19, 2012

WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600
Richland, WA 99352

Attention: Scot Fitzgerald

Contract # MOA-FH-CHPRC-2008
Group # WSCF121493
Report Date December 19, 2012

Analytical: Electronically signed by Joseph Hale

Client Services: Electronically signed by Marisol Avila

Solid samples results that have a 'Percent Solid' test are reported on a "dry weight basis", except results of TCLP, Percent Solid, and Total Activity. If no 'Percent Solid' test is reported then the results are reported on an "as received" basis.

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7005. Information designation of this report is the responsibility of the customer.

Batch QC List

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
211226	211246	5	BLANK	85940	BLANK		ICP-6010 - All possible metals
211226	211246	7	LCS	85942	LCS		ICP-6010 - All possible metals
211226	211246	9	MS	85943	B2MLL9(121490020MS)	121490020	ICP-6010 - All possible metals
211226	211246	10	MSD	85944	B2MLL9(121490020MSD)	121490020	ICP-6010 - All possible metals
211226	211246	22	SAMPLE	121493001	B2MYF1		ICP-6010 - All possible metals
211226	211246	23	SAMPLE	121493002	B2MYD8		ICP-6010 - All possible metals
211226	211246	24	SAMPLE	121493003	B2MY20		ICP-6010 - All possible metals
211226	211246	25	SAMPLE	121493004	B2MY44		ICP-6010 - All possible metals
211226	211246	26	SAMPLE	121493005	B2MY17		ICP-6010 - All possible metals
211226	211246	27	SAMPLE	121493006	B2MY41		ICP-6010 - All possible metals
211226	211246	28	SAMPLE	121493007	B2MY30		ICP-6010 - All possible metals
211226	211246	29	SAMPLE	121493008	B2MY27		ICP-6010 - All possible metals
211620	211629	4	BLANK	86453	BLANK		ICP-2008 MS All possible metal
211620	211629	5	LCS	86454	LCS		ICP-2008 MS All possible metal
211620	211629	6	SAMPLE	121493003	B2MY20		ICP-2008 MS All possible metal
211620	211629	7	MS	86455	B2MY20(121493003MS)	121493003	ICP-2008 MS All possible metal
211620	211629	8	MSD	86456	B2MY20(121493003MSD)	121493003	ICP-2008 MS All possible metal
211620	211629	9	SAMPLE	121493004	B2MY44		ICP-2008 MS All possible metal
211620	211629	10	SAMPLE	121493005	B2MY17		ICP-2008 MS All possible metal
211620	211629	11	SAMPLE	121493006	B2MY41		ICP-2008 MS All possible metal
211620	211629	12	SAMPLE	121493007	B2MY30		ICP-2008 MS All possible metal
211620	211629	13	SAMPLE	121493008	B2MY27		ICP-2008 MS All possible metal
211620	211629	14	SAMPLE	121493009	B2MY23		ICP-2008 MS All possible metal

Batch QC List

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210722	211115	1	BLANK	85392	BLANK		Tritium by LSC
210722	211115	2	LCS	85393	LCS		Tritium by LSC
210722	211115	4	DUP	85394	B2MLB2(121490027DUP)	121490027	Tritium by LSC
210722	211115	5	MS	85395	B2MLB2(121490027MS)	121490027	Tritium by LSC
210722	211115	6	SAMPLE	121493002	B2MYD8		Tritium by LSC
210722	211115	7	SAMPLE	121493005	B2MY17		Tritium by LSC
210722	211115	8	SAMPLE	121493006	B2MY41		Tritium by LSC
210722	211115	9	SAMPLE	121493008	B2MY27		Tritium by LSC
210722	211115	10	SAMPLE	121493009	B2MY23		Tritium by LSC
211127	211519	1	BLANK	85834	BLANK		GAB Discrete analysis Alpha only
211127	211519	2	LCS	85835	LCS		GAB Discrete analysis Alpha only
211127	211519	3	SAMPLE	121493002	B2MYD8		GAB Discrete analysis Alpha only
211127	211519	4	DUP	85836	B2MYD8(121493002DUP)	121493002	GAB Discrete analysis Alpha only
211127	211519	5	SAMPLE	121493005	B2MY17		GAB Discrete analysis Alpha only
211127	211519	6	SAMPLE	121493006	B2MY41		GAB Discrete analysis Alpha only
211127	211519	7	SAMPLE	121493008	B2MY27		GAB Discrete analysis Alpha only
211127	211519	8	SAMPLE	121493009	B2MY23		GAB Discrete analysis Alpha only
211127	211520	1	BLANK	85834	BLANK		GAB Discrete analysis Beta only
211127	211520	2	LCS	85835	LCS		GAB Discrete analysis Beta only
211127	211520	3	SAMPLE	121493002	B2MYD8		GAB Discrete analysis Beta only
211127	211520	4	DUP	85836	B2MYD8(121493002DUP)	121493002	GAB Discrete analysis Beta only
211127	211520	5	SAMPLE	121493005	B2MY17		GAB Discrete analysis Beta only
211127	211520	6	SAMPLE	121493006	B2MY41		GAB Discrete analysis Beta only

Batch QC List

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121493

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
211127	211520	7	SAMPLE	121493008	B2MY27		GAB Discrete analysis Beta only
211127	211520	8	SAMPLE	121493009	B2MY23		GAB Discrete analysis Beta only

Method Reference

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory, industry methods or HEIS methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-505-411	Elemental Analysis by ICP Atomic Emission Spectroscopy (ICP AES)		
	EPA SW-846	6010C	Inductively Coupled Plasma-Atomic Emmission Spectrometry
	HEIS	6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmission Spectrometry
LA-505-412	Determination of Trace Elements in Waters & Wastes by ICP Mass Spectrometry		
	EPA-600/R-94-111	200.8	Determination of Trace Elements in Waters and Waste by Inductively Coupled Plasma
	HEIS	200.8_METALS_ICPMS	Determination of Trace Elements in Waters and Waste by Inductively Coupled Plasma, Mass Spec.

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at <http://www7.rl.gov/rapidweb/AS-DOL/index.cfm>

Method Reference

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory, industry methods or HEIS methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-508-421	Operation of the Tri-Carb Model 2500TR Liquid Scintillation Analyzer		
	HEIS	ALPHA_LSC	A/B Liquid Scintillation
	HEIS	BETA_LSC	A/B Liquid Scintillation
	HEIS	TC99_3MDSK_LSC	TC99 by Liquid Scintillation
	HEIS	TRITIUM_EIE_LSC	Tritium, by Eichrome ion exchange, LSC
LA-508-415	Operation Of The Protean 2-Inch Alpha/Beta Counting System For Gross Alpha/ Beta Samples		
	HEIS	ALPHA_GPC	Gross Alpha by GPC
	HEIS	BETA_GPC	Gross Beta by GPC
	HEIS	SRTOT_SEP_PRECIP_GPC	Strontium beta isotopic, GPC

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at <http://www7.rl.gov/rapidweb/AS-DOL/index.cfm>

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493001
 SAF# S13-012
 Sample ID B2MYF1

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	U	<19		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		20800		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		6000		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		22200		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		43.5		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411		63.6		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	B	8.90		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	BC	10.3		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		83200		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		561		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493001
 SAF# S13-012
 Sample ID B2MYF1

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493002
 SAF# S13-012
 Sample ID B2MYD8

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	B	19.3		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		21200		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		6020		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		22800		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		44.3		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411		65.9		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	B	7.60		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	BC	11.4		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		84500		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		568		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493002
 SAF# S13-012
 Sample ID B2MYD8

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493003
 SAF# S13-012
 Sample ID B2MY20

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	U	<19		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		9550		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		4300		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		11400		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		35.0		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411	B	11.0		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	B	11.0		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	BC	14.7		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		42300		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		215		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493003
 SAF# S13-012
 Sample ID B2MY20

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Arsenic	7440-38-2	LA-505-412	C	3.73		ug/L	1	0.20	2.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493004
 SAF# S13-012
 Sample ID B2MY44

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	B	23.3		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		5960		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		2820		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		9510		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		49.5		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		28400		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		138		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493004
 SAF# S13-012
 Sample ID B2MY44

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Arsenic	7440-38-2	LA-505-412	BDC	1.59		ug/L	2	0.40	4.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493005
 SAF# S13-012
 Sample ID B2MY17

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411		119		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		9760		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		4450		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		11700		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		35.9		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411	B	10.9		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	B	11.8		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	BC	17.8		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		43300		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		224		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493005
 SAF# S13-012
 Sample ID B2MY17

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	2.02		ug/L	2	0.10	0.50	12/17/12
Arsenic	7440-38-2	LA-505-412	DC	4.19		ug/L	2	0.40	4.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493006
 SAF# S13-012
 Sample ID B2MY41

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411		139		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		6180		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	B	9.10		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		2920		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		9630		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		52.4		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411	B	5.70		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		29400		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		136		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493006
 SAF# S13-012
 Sample ID B2MY41

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	0.942		ug/L	2	0.10	0.50	12/17/12
Arsenic	7440-38-2	LA-505-412	BDC	1.60		ug/L	2	0.40	4.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493007
 SAF# S13-012
 Sample ID B2MY30

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	B	71.3		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		8460		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	B	11.0		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		89300		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		14500		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		41.1		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411	B	5.60		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		17800		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		132		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493007
 SAF# S13-012
 Sample ID B2MY30

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Arsenic	7440-38-2	LA-505-412	DC	5.34		ug/L	2	0.40	4.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493008
 SAF# S13-012
 Sample ID B2MY27

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										12/04/12
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411		535		ug/L	1	19	95	12/05/12
Magnesium	7439-95-4	LA-505-411		8930		ug/L	1	4.0	20	12/05/12
Manganese	7439-96-5	LA-505-411	B	14.5		ug/L	1	4.0	20	12/05/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Potassium	7440-09-7	LA-505-411		88400		ug/L	1	76	380	12/05/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Sodium	7440-23-5	LA-505-411		14800		ug/L	1	10	50	12/05/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	12/05/12
Barium	7440-39-3	LA-505-411		45.2		ug/L	1	4.0	20	12/05/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Chromium	7440-47-3	LA-505-411	B	10.2		ug/L	1	5.0	25	12/05/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
Vanadium	7440-62-2	LA-505-411	U	<5.0		ug/L	1	5.0	25	12/05/12
Zinc	7440-66-6	LA-505-411	BC	12.5		ug/L	1	5.0	25	12/05/12
Calcium	7440-70-2	LA-505-411		18800		ug/L	1	49	240	12/05/12
Strontium	7440-24-6	LA-505-411		140		ug/L	1	9.0	45	12/05/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493008
 SAF# S13-012
 Sample ID B2MY27

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	12/05/12
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	5.40		ug/L	2	0.10	0.50	12/17/12
Arsenic	7440-38-2	LA-505-412	DC	5.23		ug/L	2	0.40	4.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Sample # 121493009
 SAF# S13-012
 Sample ID B2MY23

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										12/13/12
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	2.58		ug/L	2	0.10	0.50	12/17/12
Arsenic	7440-38-2	LA-505-412	DC	7.89		ug/L	2	0.40	4.0	12/17/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)
 o - LCS recovery outside established laboratory acceptance limits.
 o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Sample # 121493002
 SAF# S13-012
 Sample ID B2MYD8

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										12/11/12
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415	U	0.32	1.8	pCi/L	1	3.2		12/14/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		15	3.4	pCi/L	1	4.0		12/13/12
Tritium by LSC EICHROM WA/LIQ PREP										11/26/12
Tritium by LSC										
Tritium	10028-17-8	LA-508-421		6800	1400	pCi/L	1	330		11/30/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
 U - Analyzed for but not detected above limiting criteria.
 N - Spike Recovery is Outside Control Limits.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Sample # 121493005
 SAF# S13-012
 Sample ID B2MY17

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										12/11/12
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415	U	0.80	1.4	pCi/L	1	2.3		12/14/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		7.4	2.4	pCi/L	1	3.2		12/13/12
Tritium by LSC EICHROM WA/LIQ PREP										11/26/12
Tritium by LSC										
Tritium	10028-17-8	LA-508-421		3100	700	pCi/L	1	330		11/30/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
 U - Analyzed for but not detected above limiting criteria.
 N - Spike Recovery is Outside Control Limits.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Sample # 121493006
 SAF# S13-012
 Sample ID B2MY41

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										12/11/12
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415	U	1.6	1.4	pCi/L	1	2.1		12/14/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		4.0	2.1	pCi/L	1	3.2		12/13/12
Tritium by LSC EICHROM WA/LIQ PREP										11/26/12
Tritium by LSC										
Tritium	10028-17-8	LA-508-421	U	-120	150	pCi/L	1	330		11/30/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
 U - Analyzed for but not detected above limiting criteria.
 N - Spike Recovery is Outside Control Limits.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Sample # 121493008
 SAF# S13-012
 Sample ID B2MY27

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										12/11/12
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415		3.3	2	pCi/L	1	2.7		12/14/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		77	9.2	pCi/L	1	3.8		12/13/12
Tritium by LSC EICHROM WA/LIQ PREP										11/26/12
Tritium by LSC										
Tritium	10028-17-8	LA-508-421		600	270	pCi/L	1	330		11/30/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
 U - Analyzed for but not detected above limiting criteria.
 N - Spike Recovery is Outside Control Limits.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Sample # 121493009
 SAF# S13-012
 Sample ID B2MY23

Matrix WATER
 Sampled 11/20/12
 Received 11/20/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										12/11/12
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415	U	0.74	1.4	pCi/L	1	2.5		12/14/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		100	12	pCi/L	1	3.3		12/13/12
Tritium by LSC EICHROM WA/LIQ PREP										11/26/12
Tritium by LSC										
Tritium	10028-17-8	LA-508-421	U	130	240	pCi/L	1	330		11/30/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
 U - Analyzed for but not detected above limiting criteria.
 N - Spike Recovery is Outside Control Limits.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121493

Analytical Batch 211115 (QC Batch: 210722) **Test** Tritium by LSC
Associated Samples 121493002, 121493005, 121493006, 121493008, 121493009

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #85392							
Tritium LCS	10028-17-8		39	pCi/L					U	11/30/12
			QC Sample #85393							
Tritium DUP	10028-17-8		3200	pCi/L	101.9	80 - 120				11/30/12
			QC Sample #85394							
			Original 121490027							
Tritium MS	10028-17-8		-45	pCi/L			369.40	20	* U	11/30/12
			QC Sample #85395							
			Original 121490027							
Tritium	10028-17-8		20000	pCi/L	96.7	75 - 125				11/30/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121493

Analytical Batch 211246 (QC Batch: 211226) **Test** ICP-6010 - All possible metals
Associated Samples 121493001, 121493002, 121493003, 121493004, 121493005, 121493006, 121493007, 121493008

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #85940								
Iron	7439-89-6	<19		ug/L					U	12/05/12
Magnesium	7439-95-4	<4.0		ug/L					U	12/05/12
Manganese	7439-96-5	<4.0		ug/L					U	12/05/12
Nickel	7440-02-0	<4.0		ug/L					U	12/05/12
Potassium	7440-09-7	<76		ug/L					U	12/05/12
Silver	7440-22-4	<4.0		ug/L					U	12/05/12
Sodium	7440-23-5	11.1		ug/L					B	12/05/12
Antimony	7440-36-0	<36		ug/L					U	12/05/12
Barium	7440-39-3	<4.0		ug/L					U	12/05/12
Cadmium	7440-43-9	<4.0		ug/L					U	12/05/12
Chromium	7440-47-3	<5.0		ug/L					U	12/05/12
Cobalt	7440-48-4	<4.0		ug/L					U	12/05/12
Copper	7440-50-8	<4.0		ug/L					U	12/05/12
Vanadium	7440-62-2	<5.0		ug/L					U	12/05/12
Zinc	7440-66-6	5.00		ug/L					B	12/05/12
Calcium	7440-70-2	<49		ug/L					U	12/05/12
Strontium	7440-24-6	<9.0		ug/L					U	12/05/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Beryllium	7440-41-7		<4.0	ug/L					U	12/05/12
LCS			QC Sample #85942							
Iron	7439-89-6		998	ug/L	99.8	80 - 120				12/05/12
Magnesium	7439-95-4		10200	ug/L	102.4	80 - 120				12/05/12
Manganese	7439-96-5		1020	ug/L	102.4	80 - 120				12/05/12
Nickel	7440-02-0		1000	ug/L	100.3	80 - 120				12/05/12
Potassium	7440-09-7		10700	ug/L	106.9	80 - 120				12/05/12
Silver	7440-22-4		999	ug/L	99.9	80 - 120				12/05/12
Sodium	7440-23-5		10300	ug/L	103	80 - 120				12/05/12
Antimony	7440-36-0		1010	ug/L	101.4	80 - 120				12/05/12
Barium	7440-39-3		1030	ug/L	103.2	80 - 120				12/05/12
Cadmium	7440-43-9		1010	ug/L	100.8	80 - 120				12/05/12
Chromium	7440-47-3		1010	ug/L	101.3	80 - 120				12/05/12
Cobalt	7440-48-4		983	ug/L	98.3	80 - 120				12/05/12
Copper	7440-50-8		1020	ug/L	102.4	80 - 120				12/05/12
Vanadium	7440-62-2		1000	ug/L	100.1	80 - 120				12/05/12
Zinc	7440-66-6		1030	ug/L	103.2	80 - 120				12/05/12
Calcium	7440-70-2		20400	ug/L	102	80 - 120				12/05/12
Strontium	7440-24-6		995	ug/L	99.5	80 - 120				12/05/12
Beryllium	7440-41-7		1020	ug/L	101.8	80 - 120				12/05/12
MS			QC Sample #85943							
			Original 121490020							
Iron	7439-89-6		1010	ug/L	100.7	75 - 125				12/05/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Magnesium	7439-95-4		10200	ug/L	101.6	75 - 125				12/05/12
Manganese	7439-96-5		1020	ug/L	101.8	75 - 125				12/05/12
Nickel	7440-02-0		988	ug/L	98.8	75 - 125				12/05/12
Potassium	7440-09-7		10600	ug/L	106.2	75 - 125				12/05/12
Silver	7440-22-4		1000	ug/L	100	75 - 125				12/05/12
Sodium	7440-23-5		10100	ug/L	101.3	75 - 125				12/05/12
Antimony	7440-36-0		1020	ug/L	102	75 - 125				12/05/12
Barium	7440-39-3		1030	ug/L	103.1	75 - 125				12/05/12
Cadmium	7440-43-9		1000	ug/L	100.3	75 - 125				12/05/12
Chromium	7440-47-3		1010	ug/L	100.9	75 - 125				12/05/12
Cobalt	7440-48-4		970	ug/L	97	75 - 125				12/05/12
Copper	7440-50-8		1020	ug/L	102	75 - 125				12/05/12
Vanadium	7440-62-2		1000	ug/L	100.2	75 - 125				12/05/12
Zinc	7440-66-6		1020	ug/L	102.3	75 - 125				12/05/12
Calcium	7440-70-2		20200	ug/L	101.2	75 - 125				12/05/12
Strontium	7440-24-6		983	ug/L	98.3	75 - 125				12/05/12
Beryllium	7440-41-7		1020	ug/L	102.2	75 - 125				12/05/12
MSD			QC Sample #85944							
			Original	121490020				Paired	85943	
Iron	7439-89-6		1000	ug/L	100.2	75 - 125	0.50	20		12/05/12
Magnesium	7439-95-4		10300	ug/L	102.9	75 - 125	0.80	20		12/05/12
Manganese	7439-96-5		1010	ug/L	101.4	75 - 125	0.40	20		12/05/12
Nickel	7440-02-0		979	ug/L	97.9	75 - 125	0.90	20		12/05/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Potassium	7440-09-7		10600	ug/L	105.6	75 - 125	0.50	20		12/05/12
Silver	7440-22-4		996	ug/L	99.6	75 - 125	0.40	20		12/05/12
Sodium	7440-23-5		10100	ug/L	101.4	75 - 125	0.10	20		12/05/12
Antimony	7440-36-0		1020	ug/L	101.5	75 - 125	0.50	20		12/05/12
Barium	7440-39-3		1020	ug/L	102.4	75 - 125	0.70	20		12/05/12
Cadmium	7440-43-9		998	ug/L	99.8	75 - 125	0.50	20		12/05/12
Chromium	7440-47-3		1000	ug/L	100.5	75 - 125	0.40	20		12/05/12
Cobalt	7440-48-4		963	ug/L	96.3	75 - 125	0.70	20		12/05/12
Copper	7440-50-8		1010	ug/L	101.3	75 - 125	0.70	20		12/05/12
Vanadium	7440-62-2		997	ug/L	99.7	75 - 125	0.50	20		12/05/12
Zinc	7440-66-6		1020	ug/L	101.7	75 - 125	0.60	20		12/05/12
Calcium	7440-70-2		21000	ug/L	104.9	75 - 125	1.50	20		12/05/12
Strontium	7440-24-6		990	ug/L	99	75 - 125	0.60	20		12/05/12
Beryllium	7440-41-7		1020	ug/L	101.6	75 - 125	0.60	20		12/05/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Analytical Batch 211519 (QC Batch: 211127) Test GAB Discrete analysis Alpha only
 Associated Samples 121493002, 121493005, 121493006, 121493008, 121493009

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #85834								
Gross Alpha LCS	12587-46-1		0.35	pCi/L					U	12/14/12
		QC Sample #85835								
Gross Alpha DUP	12587-46-1		52	pCi/L	86.5	80 - 120				12/14/12
		QC Sample #85836								
		Original 121493002								
Gross Alpha	12587-46-1	0.32	0.46	pCi/L			35.50	20	* U	12/14/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Radiochemistry

Group # WSCF121493

Analytical Batch 211520 (QC Batch: 211127) Test GAB Discrete analysis Beta only
 Associated Samples 121493002, 121493005, 121493006, 121493008, 121493009

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #85834								
Gross Beta	12587-47-2		1.3	pCi/L					U	12/13/12
LCS		QC Sample #85835								
Gross Beta	12587-47-2		240	pCi/L	93.6	80 - 120				12/13/12
DUP		QC Sample #85836								
		Original 121493002								
Gross Beta	12587-47-2	15	14	pCi/L			8.30	20		12/13/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121493

Analytical Batch 211629 (QC Batch: 211620) Test ICP-2008 MS All possible metal
 Associated Samples 121493003, 121493004, 121493005, 121493006, 121493007, 121493008, 121493009

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #86453								
Uranium	7440-61-1		<0.050	ug/L					U	12/17/12
Arsenic	7440-38-2		0.317	ug/L					B	12/17/12
LCS		QC Sample #86454								
Uranium	7440-61-1		42.3	ug/L	105.8	85 - 115				12/17/12
Arsenic	7440-38-2		43.2	ug/L	107.9	85 - 115				12/17/12
MS		QC Sample #86455								
		Original 121493003								
Uranium	7440-61-1		43.2	ug/L	108.1	70 - 130				12/17/12
Arsenic	7440-38-2	3.73	42.7	ug/L	106.6	70 - 130				12/17/12
MSD		QC Sample #86456								
		Original 121493003								
		Paired 86455								
Uranium	7440-61-1		43.3	ug/L	108.4	70 - 130	0.20	20		12/17/12
Arsenic	7440-38-2	3.73	42.9	ug/L	107.1	70 - 130	0.40	20		12/17/12

* - QC result out of range

n/a - Not Applicable

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 8 pages
Including cover page

Waste Sampling and Characterization Facility
P.O. Box 1970 S3-30, Richland WA 99352
Phone: (509) 373-7004/FAX: (509) 373-7134

ACKNOWLEDGEMENT OF SAMPLES RECEIVED**WSCF Laboratory**

PO Box 650 S3-30
 Richland, WA 99352

ATTN: Scot Fitzgerald

Customer Code: CHPRC

PO #: 401647

Work Order #: 121493

Profile #: S13-012-274

Proj. Mgr.:

Phone:

The following samples were received from you on 11/20/2012 3:00:00 PM. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample #	Sample ID	Matrix	Collected	Received
Tests scheduled				
121493001	B2MYF1	WATER	11/20/2012 13:21	11/20/2012 15:00
		6010-W		
121493002	B2MYD8	WATER	11/20/2012 13:21	11/20/2012 15:00
		6010-W; GAB-AO-W; GAB-BO-W; H3-COL-W		
121493003	B2MY20	WATER	11/20/2012 08:33	11/20/2012 15:00
		2008-W; 6010-W		
121493004	B2MY44	WATER	11/20/2012 10:13	11/20/2012 15:00
		2008-W; 6010-W		
121493005	B2MY17	WATER	11/20/2012 08:33	11/20/2012 15:00
		2008-W; 6010-W; GAB-AO-W; GAB-BO-W; H3-COL-W		
121493006	B2MY41	WATER	11/20/2012 10:13	11/20/2012 15:00
		2008-W; 6010-W; GAB-AO-W; GAB-BO-W; H3-COL-W		
121493007	B2MY30	WATER	11/20/2012 10:59	11/20/2012 15:00
		2008-W; 6010-W		
121493008	B2MY27	WATER	11/20/2012 10:59	11/20/2012 15:00
		2008-W; 6010-W; GAB-AO-W; GAB-BO-W; H3-COL-W		
121493009	B2MY23	WATER	11/20/2012 09:26	11/20/2012 15:00
		2008-W; GAB-AO-W; GAB-BO-W; H3-COL-W		

Test Acronym Description

Test Acronym	Description

Waste Sampling and Characterization Facility
P.O. Box 1970 S3-30, Richland WA 99352
Phone: (509) 373-7004/FAX: (509) 373-7134

2008-W	ICP-MS (W)
6010-W	ICP-AES (W)
GAB-AO-W	Gross Alpha/Beta (A only)(W)
GAB-BO-W	Gross Alpha/Beta (B only)(W)
H3-COL-W	Tritium by EICHRON Column (W)

Chain of Custody

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **S13-012-206**
 Page 1 of 1

Collector: Robert Crow
 Project Title: SURV. DECEMBER 2012
 Shipped To (Lab): Waste Sampling & Characterization
 Priority: 31 Days
PRIORITY
 Contract/Requester: Karen Waters-Husted
 Sampling Origin: Hanford Site
 Logbook No.: HNF-N-50649/8D
 Method of Shipment: GOVERNMENT VEHICLE
 Telephone No.: 376-4650
 Purchase Order/Charge Code: 300071ES20
 Fee/Clear No.: N/A
 Bill of Lading/Air Bill No.: N/A
 Office Property No.: N/A
 Total Activity Exemption: Yes No
 SPECIAL INSTRUCTIONS: Hold Time
 FY12 and FY13 samples cannot be in the same SDG. Site-Wide Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 401647.
POSSIBLE SAMPLE HAZARDS/REMARKS
 ** ** Containing Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Hold Time	Holding Time	Preservative
B2M17 5	N	11-20-12	0833	1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	6 Months	HNO3 to pH <2
B2M17	N			1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	6 Months	HNO3 to pH <2
B2M17	N			1x500-mL G/P	601.0_METALS_ICP- Lst-3 (18)	6 Months	6 Months	HNO3 to pH <2
B2M17	N			1x500-mL G/P	ALPHABETA_GPC: Alpha discrete + Beta (2)	6 Months	6 Months	HNO3 to pH <2
B2M17	N			1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	6 Months	6 Months	None
B2M20 3	Y			1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	6 Months	HNO3 to pH <2
B2M20	Y			1x500-mL G/P	601.0_METALS_ICP- Lst-3 (18)	6 Months	6 Months	HNO3 to pH <2

Relinquished By: Robert Crow
 Relinquished By: Robert Crow
 Relinquished By: Robert Crow
 Relinquished By: Robert Crow
 Received By: TA Frazier
 Received By: TA Frazier
 Received By: TA Frazier
 Received By: TA Frazier
 Date/Time: NOV 20 2012 1500
 Disposed Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By: TA Frazier
 Date/Time: NOV 20 2012 1500

Matrix *

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

PRINTED 10/24/2012

A-6004-842 (REV 2)

Chain of Custody

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **S13-012-221**
Page 1 of 1

Collector	Robert Crow	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	S13-012	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071/ES20
Project Title	SURV, DECEMBER 2012	Logbook No.	HNF-N-50649 SD	Ice Chart No.	N/A
Shipped To (1 ab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	SURV	Priority:	31 Days	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1590J1993)

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 FY12 and FY13 samples cannot be in the same SDG. Site-Wide Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 401647.

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2MVA1	N	11-20-12	10:13	1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2
B2MVA1	N			1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B2MVA1	N			1x500-mL G/P	601.0_METALS_ICP: Lr-3 (18)	6 Months	HNO3 to pH <2
B2MVA1	N			1x500-mL G/P	ALPHA/BETA_GPC: Alpha discrete + Beta (2)	6 Months	HNO3 to pH <2
B2MVA1	N			1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	6 Months	None
B2MVA4	Y			1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2
B2MVA4	Y			1x500-mL G/P	601.0_METALS_ICP: Lr-3 (18)	6 Months	HNO3 to pH <2

Relinquished By	Robert Crow	Print Sign	NOV 20 2012 1508	Received By	TA Aaron	Print Sign	NOV 20 2012 1503
Relinquished By		Date/Time		Received By		Date/Time	
Relinquished By		Date/Time		Received By		Date/Time	
Relinquished By		Date/Time		Received By		Date/Time	

Matrix *

S = Soil	DS = Duan Solids
SE = Sediment	DL = Duan Liquid
SO = Solid	T = Tissue
SL = Sludge	WI = Wipe
W = Water	L = Liquid
U = Oil	V = Vapour
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 0 10/24/2012

A-5004-842 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # S13-012-212
 Page 1 of 1

Collector: Robert Crow
 SAF No.: S13-012
 Project Title: SURV, DECEMBER 2012
 Shipped To (Lab): Waste Sampling & Characterization
 Protocol: SURV
 Contact/Requester: Karen Waters-Husted
 Sampling Origin: Hanford Site
 Logbook No.: HNF-N-50649 / 80
 Method of Shipment: GOVERNMENT VEHICLE
 Priority: 31 Days
 Telephone No.: 376-4650
 Purchase Order/Charge Code: 300071ES20
 Ice Chest No.: N/A
 Bill of Lading/Air Bill No.: N/A
 Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)
SPECIAL INSTRUCTIONS
 FY12 and FY13 samples cannot be in the same SDG. Site-Wide Generator Knowledge Information Form applies. The CACN for all analytical work at WSCP is 401647.
 Hold Time: Total Activity Exemption: Yes No

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2M27 8	N	11-20-12	1059	1x600-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2
B2M27	N			1x600-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B2M27	N			1x600-mL G/P	601.0_METALS_ICP: Utr-3 (18)	6 Months	HNO3 to pH <2
B2M27	N			1x600-mL G/P	ALPHABETA_GPC: Alpha discrete + Beta (2)	6 Months	HNO3 to pH <2
B2M27	N			1x250-mL G	TRITIUM_EIE_LSG: Tritium (1)	6 Months	None
B2M30	Y			1x600-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	HNO3 to pH <2
B2M30	Y	11-20-12	1059	1x600-mL G/P	601.0_METALS_ICP: Utr-3 (18)	6 Months	HNO3 to pH <2

Relinquished By: Robert Crow
 Received By: T. Frazee
 Date/Time: NOV 20 2012 1500
 Date/Time: NOV 20 2012 1500
 Matrix: S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Dioxin Solids, DL = Dioxin Lipids, T = Tissue, WI = Wire, L = Liquid, V = Vegetation, X = Other

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer per lab procedure, used in process)
 PRINTED 0 10/24/2012
 A-6004-842 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
S13-012-209
Page 1 of 1

Collector	Robert Crow	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	S13-012	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ES20
Project Title	SURV, DECEMBER 2012	Logbook No.	HNF-N-50649/8D	Ice Chest No.	N/A
Shipped To (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	SURV	Priority:	31 Days	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS Hold Time: Yes No
 FY12 and FY13 samples cannot be in the same SDG. Site-Wide Generator Knowledge Information Form applies. The CNCN for all analytical work at WSCF is 401647.

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Hold Time	Preservative
B2N23	N	11-20-12	0924	1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1)	6 Months	HN03 to pH <2
B2N23	N	11-20-12	0924	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HN03 to pH <2
B2N23	N	11-20-12	0924	1x500-mL G/P	ALPHABETA_GPC: Alpha discrete + Beta (2)	6 Months	HN03 to pH <2
B2N23	N	11-20-12	0924	1x250-mL G	TITRIUM_EIE_LSC: Tritium (1)	6 Months	None

Relinquished By	Robert Crow	Date/Time	NOV 20 2012 1500	Received By	TA Frazee	Date/Time	NOV 20 2012 1500
Relinquished By	<i>R Crow</i>	Date/Time	1500	Received By	<i>TA Frazee</i>	Date/Time	1500
Relinquished By		Date/Time		Received By		Date/Time	
Relinquished By		Date/Time		Received By		Date/Time	

Matrix *

S = Soil	DS = Drum Solids
SE = Sediment	DL = Drum Liquids
SO = Solid	T = Truss
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