

DECEMBER 14, 2012

**WSCF Laboratory**

PO Box 650 S3-30  
Richland, WA 99352



December 14, 2012

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

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF121454

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 WSCF121454

- \* 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**

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Group # WSCF121454  
Data Deliverable Date 12/14/12

<b>SAF #</b>	<b>Sample ID</b>	<b>Sample #</b>	<b>Matrix</b>	<b>Sampled</b>	<b>Received</b>
I13-003	B2MPH4	121454001	WATER	11/13/12	11/13/12
I13-003	B2MPH5	121454002	WATER	11/13/12	11/13/12
S13-011	B2MML0	121454003	WATER	11/13/12	11/13/12
I13-003	B2MPH6	121454004	WATER	11/13/12	11/13/12
I13-003	B2MPH3	121454005	WATER	11/13/12	11/13/12

ATTACHMENT 2

**NARRATIVE**

Consisting of 4 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**

**Anions** – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

**Hexavalent Chromium** – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All 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):

- All applicable QC controls are within the established limits.

**Total Alkalinity** – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All 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 Technetium & Tritium), Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

Tracers are used to determine chemical yield. RPD is monitored in sample duplicate and is not required for tracer recovery per SOW.

**Gross Alpha / Gross Beta:**

- All applicable QC controls are within the established limits.

**Strontium-89/90:**

- All applicable QC controls are within the established limits.

**Tritium:**

- All applicable QC controls are within the established limits.

Attachment 2  
**Narrative**  
WSCF121454

**Technetium-99:**

- 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 28 pages  
Including cover page

DECEMBER 14, 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 #** WSCF121454  
**Report Date** December 14, 2012

Analytical: Electronically signed by Joseph Hale

Client Services: Electronically signed by Heather Medley

*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 # WSCF121454

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210260	210260	2	BLANK	84973	BLANK		Anions by Ion Chromatography (Water)
210260	210260	3	LCS	84974	LCS		Anions by Ion Chromatography (Water)
210260	210260	4	DUP	84975	B2MPH4(121454001DUP)	121454001	Anions by Ion Chromatography (Water)
210260	210260	5	MS	84976	B2MPH4(121454001MS)	121454001	Anions by Ion Chromatography (Water)
210260	210260	6	MSD	84977	B2MPH4(121454001MSD)	121454001	Anions by Ion Chromatography (Water)
210260	210260	9	SAMPLE	121454001	B2MPH4		Anions by Ion Chromatography (Water)
210339	210339	1	BLANK	85083	BLANK		Hexavalent chromium Discrete Analyzer
210339	210339	3	LCS	85085	LCS		Hexavalent chromium Discrete Analyzer
210339	210339	4	DUP	85086	B2ML21(121455003DUP)	121455003	Hexavalent chromium Discrete Analyzer
210339	210339	5	MS	85087	B2ML21(121455003MS)	121455003	Hexavalent chromium Discrete Analyzer
210339	210339	6	SAMPLE	121454002	B2MPH5		Hexavalent chromium Discrete Analyzer
211122	211289	4	BLANK	85827	BLANK		ICP-2008 MS All possible metal
211122	211289	5	LCS	85828	LCS		ICP-2008 MS All possible metal
211122	211289	7	MS	85829	B2MN49(121448006MS)	121448006	ICP-2008 MS All possible metal
211122	211289	8	MSD	85830	B2MN49(121448006MSD)	121448006	ICP-2008 MS All possible metal
211122	211289	23	SAMPLE	121454004	B2MPH6		ICP-2008 MS All possible metal
211122	211289	24	SAMPLE	121454005	B2MPH3		ICP-2008 MS All possible metal

Batch QC List

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210242	211277	1	BLANK	84917	BLANK		Strontium 89/90 (GPC/GEA)
210242	211277	2	LCS	84918	LCS		Strontium 89/90 (GPC/GEA)
210242	211277	3	DUP	84919	B2MXM7(121450008DUP	121450008	Strontium 89/90 (GPC/GEA)
210242	211277	5	SAMPLE	121454005	B2MPH3		Strontium 89/90 (GPC/GEA)
210248	210721	1	BLANK	84931	BLANK		Tritium by LSC
210248	210721	2	LCS	84932	LCS		Tritium by LSC
210248	210721	4	DUP	84933	B2MMW2(121446005DU	121446005	Tritium by LSC
210248	210721	5	MS	84934	B2MMW2(121446005MS)	121446005	Tritium by LSC
210248	210721	10	SAMPLE	121454005	B2MPH3		Tritium by LSC
210322	210643	1	BLANK	85005	BLANK		GAB Discrete analysis Alpha only
210322	210643	2	LCS	85006	LCS		GAB Discrete analysis Alpha only
210322	210643	3	SAMPLE	121454005	B2MPH3		GAB Discrete analysis Alpha only
210322	210643	4	DUP	85007	B2MPH3(121454005DUP	121454005	GAB Discrete analysis Alpha only
210414	210626	1	BLANK	85217	BLANK		TC99 by Liquid Scintillation
210414	210626	2	LCS	85218	LCS		TC99 by Liquid Scintillation
210414	210626	3	SAMPLE	121454005	B2MPH3		TC99 by Liquid Scintillation
210414	210626	4	DUP	85219	B2MPH3(121454005DUP	121454005	TC99 by Liquid Scintillation
210414	210626	5	MS	85220	B2MPH3(121454005MS)	121454005	TC99 by Liquid Scintillation
211268	211279	1	BLANK	85005	BLANK		GAB Discrete analysis Beta only
211268	211279	2	LCS	85006	LCS		GAB Discrete analysis Beta only
211268	211279	3	DUP	85007	B2MPH3(121454005DUP	121454005	GAB Discrete analysis Beta only
211268	211279	7	SAMPLE	121454005	B2MPH3		GAB Discrete analysis Beta only

Batch QC List

Attention Scot Fitzgerald  
 Department Wet Chemistry

Group # WSCF121454

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210653	210653	1	LCS	85361	LCS		Total Alkalinity as mg/L CaCO3 (Water)
210653	210653	9	DUP	85362	B2MN75(121448008DUP)	121448008	Total Alkalinity as mg/L CaCO3 (Water)
210653	210653	12	SAMPLE	121454003	B2MML0		Total Alkalinity as mg/L CaCO3 (Water)
210653	210653	13	LCS	85363	LCS		Total Alkalinity as mg/L CaCO3 (Water)
210653	210653	19	LCS	85364	LCS		Total Alkalinity as mg/L CaCO3 (Water)

Method Reference

Attention Scot Fitzgerald  
 Department Inorganic

Group # WSCF121454

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.

<b>LA-265-403</b>	Hexavalent Chromium Analysis		
	EPA SW-846	7196A	Hexavalent Chromium
	HEIS	7196_CR6	Hexavalent Chromium
<b>LA-505-412</b>	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.
<b>LA-533-410</b>	Anion Analysis by Ion Chromatography		
	EPA-600/R-94-111	300.0	Determination of Inorganic Anions by Ion Chromatography
	HEIS	300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

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 # WSCF121454

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.

<b>LA-220-406</b>	Strontium-89 and 90 in Aqueous Samples by SR-SPEC Separation		
	HEIS	SRTOT_SEP_PRECIP_GPC	Strontium 89/90, by Sr-Spec Sep.
<b>LA-508-421</b>	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
<b>LA-508-415</b>	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>

Method Reference

Attention Scot Fitzgerald  
Department Wet Chemistry

Group # WSCF121454

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-531-411	Alkalinity		
	SM	2320	Alkalinity
	HEIS	2320_ALKALINITY	Alkalinity

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 # WSCF121454

Sample # 121454001  
 SAF# 113-003  
 Sample ID B2MPH4

Matrix WATER  
 Sampled 11/13/12  
 Received 11/13/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>11/13/12</b>										
<b>Anions by Ion Chromatography (Water)</b>										
Fluoride	16984-48-8	LA-533-410	D	0.186		ug/mL	2	0.046	0.14	11/13/12
Chloride	16887-00-6	LA-533-410	D	12.8		ug/mL	2	0.12	0.81	11/13/12
Nitrite-N	NO2-N	LA-533-410	UD	<0.038		ug/mL	2	0.038	0.20	11/13/12
Nitrate-N	NO3-N	LA-533-410	D	5.67		ug/mL	2	0.038	0.20	11/13/12
Sulfate	14808-79-8	LA-533-410	D	38.3		ug/mL	2	0.22	2.1	11/13/12

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 # WSCF121454

Sample # 121454002  
 SAF# 113-003  
 Sample ID B2MPH5

Matrix WATER  
 Sampled 11/13/12  
 Received 11/13/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/13/12
<b>Hexavalent chromium Discrete Analyzer</b>										
Hexavalent chromium	18540-29-9	LA-265-403		0.00740		mg/L	1	0.0020	0.0050	11/13/12

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 # WSCF121454

Sample # 121454004  
 SAF# I13-003  
 Sample ID B2MPH6

Matrix WATER  
 Sampled 11/13/12  
 Received 11/13/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>ICPMS Prep (W)</b>										<b>12/06/12</b>
<b>ICP-2008 MS All possible metal</b>										
Aluminum	7429-90-5	LA-505-412	D	366		ug/L	2	10	100	12/10/12
Silver	7440-22-4	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	12/10/12
Barium	7440-39-3	LA-505-412	D	33.9		ug/L	2	0.40	4.0	12/10/12
Beryllium	7440-41-7	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	12/10/12
Cadmium	7440-43-9	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Chromium	7440-47-3	LA-505-412	D	8.21		ug/L	2	0.20	2.0	12/10/12
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	12/10/12
Copper	7440-50-8	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	12/10/12
Lead	7439-92-1	LA-505-412	BD	0.286		ug/L	2	0.10	1.0	12/10/12
Molybdenum	7439-98-7	LA-505-412	D	3.01		ug/L	2	0.10	1.0	12/10/12
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Tin	7440-31-5	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Arsenic	7440-38-2	LA-505-412	BD	2.59		ug/L	2	0.40	4.0	12/10/12
Selenium	7782-49-2	LA-505-412	UD	<2.0		ug/L	2	2.0	20	12/10/12

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 # WSCF121454

Sample # 121454005  
 SAF# I13-003  
 Sample ID B2MPH3

Matrix WATER  
 Sampled 11/13/12  
 Received 11/13/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>ICPMS Prep (W)</b>										<b>12/06/12</b>
<b>ICP-2008 MS All possible metal</b>										
Aluminum	7429-90-5	LA-505-412	BD	22.7		ug/L	2	10	100	12/10/12
Silver	7440-22-4	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	12/10/12
Barium	7440-39-3	LA-505-412	D	33.1		ug/L	2	0.40	4.0	12/10/12
Beryllium	7440-41-7	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	12/10/12
Cadmium	7440-43-9	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Chromium	7440-47-3	LA-505-412	D	8.06		ug/L	2	0.20	2.0	12/10/12
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	12/10/12
Copper	7440-50-8	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	12/10/12
Lead	7439-92-1	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Molybdenum	7439-98-7	LA-505-412	D	2.94		ug/L	2	0.10	1.0	12/10/12
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Tin	7440-31-5	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	12/10/12
Arsenic	7440-38-2	LA-505-412	BD	2.44		ug/L	2	0.40	4.0	12/10/12
Selenium	7782-49-2	LA-505-412	UD	<2.0		ug/L	2	2.0	20	12/10/12

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)  
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U - Analyzed for but not detected above limiting criteria.  
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 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 # WSCF121454

Sample # 121454005  
 SAF# 113-003  
 Sample ID B2MPH3

Matrix WATER  
 Sampled 11/13/12  
 Received 11/13/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>GAB Prep for Discrete Analysis (W)</b>										11/20/12
<b>GAB Discrete analysis Alpha only</b>										
Gross Alpha	12587-46-1	LA-508-415	U	2.3	1.9	pCi/L	1	2.8		11/30/12
<b>GAB Discrete analysis Beta only</b>										
Gross Beta	12587-47-2	LA-508-415		48	6.5	pCi/L	1	4.3		12/10/12
<b>Strontium 89/90 WATER/LIQUID PREP</b>										12/06/12
<b>Strontium 89/90 (GPC/GEA)</b>										
Strontium-89_90	SR-RAD	LA-220-406	U	0.83	.67	pCi/L	1	1.0		12/11/12
<b>TC99 by Liquid Scin. WATER/LIQUID PREP</b>										11/19/12
<b>TC99 by Liquid Scintillation</b>										
Technetium-99	14133-76-7	LA-508-421		46	10	pCi/L	1	6.4		11/19/12
<b>Tritium by LSC EICHROM WA/LIQ PREP</b>										11/14/12
<b>Tritium by LSC</b>										
Tritium	10028-17-8	LA-508-421		1900	450	pCi/L	1	290		11/22/12

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 Wet Chemistry

Group # WSCF121454

Sample # 121454003  
 SAF# S13-011  
 Sample ID B2MML0

Matrix WATER  
 Sampled 11/13/12  
 Received 11/13/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>11/14/12</b>										
<b>Total Alkalinity as mg/L CaCO3 (Water)</b>										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		110		mg/L	1	1	10	11/14/12

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

B - Analyte < the RDL but >= the IDL/MDL.  
 C - Analyte was found in the Associated Blank. (Inorganic)  
 D - Analyte was reported at a secondary dilution factor.  
 N - MS and/or MSD sample recovery outside control limits.  
 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** Inorganic

**Group #** WSCF121454

**Analytical Batch** 210260 (QC Batch: 210260)  
**Associated Samples** 121454001

**Test** Anions by Ion Chromatography (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>		<b>QC Sample #84973</b>								
Fluoride	16984-48-8	<0.023		ug/mL					U	11/13/12
Chloride	16887-00-6	<0.058		ug/mL					U	11/13/12
Nitrite-N	NO2-N	<0.019		ug/mL					U	11/13/12
Nitrate-N	NO3-N	<0.019		ug/mL					U	11/13/12
Sulfate	14808-79-8	<0.11		ug/mL					U	11/13/12
<b>LCS</b>		<b>QC Sample #84974</b>								
Fluoride	16984-48-8	0.974		ug/mL	98.4	90 - 110				11/13/12
Chloride	16887-00-6	1.79		ug/mL	90.2	90 - 110				11/13/12
Nitrite-N	NO2-N	1.00		ug/mL	102.5	90 - 110				11/13/12
Nitrate-N	NO3-N	0.881		ug/mL	99.5	90 - 110				11/13/12
Sulfate	14808-79-8	3.92		ug/mL	100.1	90 - 110				11/13/12
<b>DUP</b>		<b>QC Sample #84975</b>								
		<b>Original 121454001</b>								
Fluoride	16984-48-8	0.186	0.188	ug/mL			0.60	20	D	11/13/12
Chloride	16887-00-6	12.8	12.7	ug/mL			0.70	20	D	11/13/12
Nitrite-N	NO2-N	<0.038	<0.038	ug/mL			0.00	20	UD	11/13/12
Nitrate-N	NO3-N	5.67	5.66	ug/mL			0.20	20	D	11/13/12

\* - QC result out of range

n/a - Not Applicable



**Quality Control Report**

**Attention** Scot Fitzgerald  
**Department** Inorganic

**Group #** WSCF121454

**Analytical Batch** 210339 (QC Batch: 210339)      **Test** Hexavalent chromium Discrete Analyzer  
**Associated Samples** 121454002

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										
			<b>QC Sample #85083</b>							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	11/13/12
<b>LCS</b>			<b>QC Sample #85085</b>							
Hexavalent chromium	18540-29-9		0.0518	mg/L	103.6	90 - 110				11/13/12
<b>DUP</b>			<b>QC Sample #85086</b>							
			<b>Original 121455003</b>							
Hexavalent chromium	18540-29-9		0.00920	mg/L			0.00	20		11/13/12
<b>MS</b>			<b>QC Sample #85087</b>							
			<b>Original 121455003</b>							
Hexavalent chromium	18540-29-9		0.0433	mg/L	108.2	85 - 115				11/13/12

\* - QC result out of range      n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

Analytical Batch 210626 (QC Batch: 210414) Test TC99 by Liquid Scintillation  
 Associated Samples 121454005

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										
Technetium-99	14133-76-7		-6.5	pCi/L					U	11/19/12
<b>LCS</b>										
Technetium-99	14133-76-7		210	pCi/L	98.4	80 - 120				11/19/12
<b>DUP</b>										
Technetium-99	14133-76-7	46	44	pCi/L			4.40	20		11/19/12
<b>MS</b>										
Technetium-99	14133-76-7	46	850	pCi/L	98.4	75 - 125				11/19/12

\* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

Analytical Batch 210643 (QC Batch: 210322)  
 Associated Samples 121454005

Test GAB Discrete analysis Alpha only

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>		<b>QC Sample #85005</b>								
Gross Alpha	12587-46-1		-0.089	pCi/L					U	11/30/12
<b>LCS</b>		<b>QC Sample #85006</b>								
Gross Alpha	12587-46-1		55	pCi/L	92.6	80 - 120				11/30/12
<b>DUP</b>		<b>QC Sample #85007</b>								
		<b>Original 121454005</b>								
Gross Alpha	12587-46-1	2.3	1.1	pCi/L			71.70	20	* U	11/30/12

\* - QC result out of range

n/a - Not Applicable

**Quality Control Report**

**Attention** Scot Fitzgerald  
**Department** Wet Chemistry

**Group #** WSCF121454

**Analytical Batch** 210653 (QC Batch: 210653)      **Test** Total Alkalinity as mg/L CaCO3 (Water)  
**Associated Samples** 121454003

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>LCS</b>			<b>QC Sample #85361</b>							
Total Alkalinity as CaCO3	ALKALINITY	98		mg/L	97.6	80 - 120				11/14/12
<b>DUP</b>			<b>QC Sample #85362</b>							
			<b>Original 121448008</b>							
Total Alkalinity as CaCO3	ALKALINITY	95		mg/L			0.00	20		11/14/12
<b>LCS</b>			<b>QC Sample #85363</b>							
Total Alkalinity as CaCO3	ALKALINITY	97		mg/L	97.5	80 - 120				11/14/12
<b>LCS</b>			<b>QC Sample #85364</b>							
Total Alkalinity as CaCO3	ALKALINITY	98		mg/L	97.7	80 - 120				11/14/12

\* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

Analytical Batch 210721 (QC Batch: 210248)      Test Tritium by LSC  
 Associated Samples 121454005

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										
			<b>QC Sample #84931</b>							
Tritium	10028-17-8		51	pCi/L					U	11/22/12
<b>LCS</b>										
			<b>QC Sample #84932</b>							
Tritium	10028-17-8		3500	pCi/L	112.6	80 - 120				11/22/12
<b>DUP</b>										
			<b>QC Sample #84933</b>							
			<b>Original 121446005</b>							
Tritium	10028-17-8		620	pCi/L			7.20	20		11/22/12
<b>MS</b>										
			<b>QC Sample #84934</b>							
			<b>Original 121446005</b>							
Tritium	10028-17-8		22000	pCi/L	105	75 - 125				11/22/12

\* - QC result out of range      n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

Analytical Batch 211277 (QC Batch: 210242) Test Strontium 89/90 (GPC/GEA)  
 Associated Samples 121454005

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>		<b>QC Sample #84917</b>								
Strontium-89_90	SR-RAD		0.26	pCi/L					U	12/11/12
<b>LCS</b>		<b>QC Sample #84918</b>								
Strontium-89_90	SR-RAD		94	pCi/L	105.9	80 - 120				12/11/12
<b>DUP</b>		<b>QC Sample #84919</b>								
		<b>Original 121450008</b>								
Strontium-89_90	SR-RAD		9800	pCi/L			11.00	20		12/11/12

\* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

Analytical Batch 211279 (QC Batch: 211268) Test GAB Discrete analysis Beta only  
 Associated Samples 121454005

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>		<b>QC Sample #85005</b>								
Gross Beta	12587-47-2		-2.4	pCi/L					U	12/10/12
<b>LCS</b>		<b>QC Sample #85006</b>								
Gross Beta	12587-47-2		250	pCi/L	97.9	80 - 120				12/10/12
<b>DUP</b>		<b>QC Sample #85007</b>								
		<b>Original 121454005</b>								
Gross Beta	12587-47-2	48	44	pCi/L			9.00	20		12/10/12

\* - QC result out of range

n/a - Not Applicable

**Quality Control Report**

**Attention** Scot Fitzgerald  
**Department** Inorganic

**Group #** WSCF121454

**Analytical Batch** 211289 (QC Batch: 211122)  
**Associated Samples** 121454004, 121454005

**Test** ICP-2008 MS All possible metal

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>		<b>QC Sample #85827</b>								
Aluminum	7429-90-5	<5.0		ug/L					U	12/10/12
Silver	7440-22-4	<0.050		ug/L					U	12/10/12
Antimony	7440-36-0	<0.30		ug/L					U	12/10/12
Barium	7440-39-3	<0.20		ug/L					U	12/10/12
Beryllium	7440-41-7	<0.10		ug/L					U	12/10/12
Cadmium	7440-43-9	<0.050		ug/L					U	12/10/12
Chromium	7440-47-3	<0.10		ug/L					U	12/10/12
Cobalt	7440-48-4	<0.050		ug/L					U	12/10/12
Copper	7440-50-8	<0.10		ug/L					U	12/10/12
Lead	7439-92-1	<0.050		ug/L					U	12/10/12
Molybdenum	7439-98-7	<0.050		ug/L					U	12/10/12
Thallium	7440-28-0	<0.050		ug/L					U	12/10/12
Tin	7440-31-5	<0.050		ug/L					U	12/10/12
Arsenic	7440-38-2	<0.20		ug/L					U	12/10/12
Selenium	7782-49-2	<1.0		ug/L					U	12/10/12
<b>LCS</b>		<b>QC Sample #85828</b>								

\* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Inorganic

Group # WSCF121454

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Aluminum	7429-90-5		424	ug/L	105.9	85 - 115				12/10/12
Silver	7440-22-4		43.9	ug/L	109.8	85 - 115				12/10/12
Antimony	7440-36-0		41.1	ug/L	102.8	85 - 115				12/10/12
Barium	7440-39-3		42.1	ug/L	105.3	85 - 115				12/10/12
Beryllium	7440-41-7		43.1	ug/L	107.8	85 - 115				12/10/12
Cadmium	7440-43-9		41.4	ug/L	103.4	85 - 115				12/10/12
Chromium	7440-47-3		42.4	ug/L	106.1	85 - 115				12/10/12
Cobalt	7440-48-4		42.0	ug/L	105.1	85 - 115				12/10/12
Copper	7440-50-8		42.0	ug/L	105	85 - 115				12/10/12
Lead	7439-92-1		42.5	ug/L	106.4	85 - 115				12/10/12
Molybdenum	7439-98-7		42.1	ug/L	105.3	85 - 115				12/10/12
Thallium	7440-28-0		42.0	ug/L	105	85 - 115				12/10/12
Tin	7440-31-5		41.7	ug/L	104.2	85 - 115				12/10/12
Arsenic	7440-38-2		41.9	ug/L	104.7	85 - 115				12/10/12
Selenium	7782-49-2		39.5	ug/L	98.7	85 - 115				12/10/12
<b>MS</b>			<b>QC Sample #85829</b>							
			<b>Original 121448006</b>							
Aluminum	7429-90-5		386	ug/L	96.5	70 - 130				12/10/12
Silver	7440-22-4		40.4	ug/L	101.1	70 - 130				12/10/12
Antimony	7440-36-0		41.5	ug/L	103.6	70 - 130				12/10/12
Barium	7440-39-3		44.5	ug/L	111.3	70 - 130				12/10/12
Beryllium	7440-41-7		40.7	ug/L	101.8	70 - 130				12/10/12
Cadmium	7440-43-9		39.7	ug/L	99.3	70 - 130				12/10/12

\* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Inorganic

Group # WSCF121454

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Chromium	7440-47-3		38.3	ug/L	95.8	70 - 130				12/10/12
Cobalt	7440-48-4		37.0	ug/L	92.4	70 - 130				12/10/12
Copper	7440-50-8		35.4	ug/L	88.5	70 - 130				12/10/12
Lead	7439-92-1		41.6	ug/L	103.9	70 - 130				12/10/12
Molybdenum	7439-98-7		42.1	ug/L	105.2	70 - 130				12/10/12
Thallium	7440-28-0		41.4	ug/L	103.6	70 - 130				12/10/12
Tin	7440-31-5		41.3	ug/L	103.2	70 - 130				12/10/12
Arsenic	7440-38-2		41.4	ug/L	103.4	70 - 130				12/10/12
Selenium	7782-49-2		39.3	ug/L	98.2	70 - 130				12/10/12
<b>MSD</b>			<b>QC Sample #85830</b>							
			<b>Original</b>	<b>121448006</b>				<b>Paired</b>	<b>85829</b>	
Aluminum	7429-90-5		385	ug/L	96.3	70 - 130	0.20	20		12/10/12
Silver	7440-22-4		39.3	ug/L	98.3	70 - 130	2.80	20		12/10/12
Antimony	7440-36-0		40.4	ug/L	100.9	70 - 130	2.70	20		12/10/12
Barium	7440-39-3		37.9	ug/L	94.8	70 - 130	5.10	20		12/10/12
Beryllium	7440-41-7		41.2	ug/L	103.1	70 - 130	1.30	20		12/10/12
Cadmium	7440-43-9		39.1	ug/L	97.8	70 - 130	1.50	20		12/10/12
Chromium	7440-47-3		38.3	ug/L	95.8	70 - 130	0.00	20		12/10/12
Cobalt	7440-48-4		36.7	ug/L	91.8	70 - 130	0.60	20		12/10/12
Copper	7440-50-8		35.1	ug/L	87.8	70 - 130	0.80	20		12/10/12
Lead	7439-92-1		40.3	ug/L	100.8	70 - 130	3.00	20		12/10/12
Molybdenum	7439-98-7		40.4	ug/L	100.9	70 - 130	3.80	20		12/10/12
Thallium	7440-28-0		40.5	ug/L	101.2	70 - 130	2.30	20		12/10/12

\* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Inorganic

Group # WSCF121454

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Tin	7440-31-5		40.0	ug/L	100.1	70 - 130	3.00	20		12/10/12
Arsenic	7440-38-2		39.8	ug/L	99.6	70 - 130	3.30	20		12/10/12
Selenium	7782-49-2		37.7	ug/L	94.2	70 - 130	3.50	20		12/10/12

\* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald  
 Department Radiochemistry

Group # WSCF121454

Analytical Batch 211277 (QC Batch: 210242) Test Strontium 89/90 (GPC/GEA)  
 Associated Samples 121454005

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>SAMPLE</b>		<b>Sample #121454005</b>								
Strontium Nitrate	10042-76-9			mg	78.5	25 - 105				12/11/12
<b>BLANK</b>		<b>QC Sample #84917</b>								
Strontium Nitrate	10042-76-9			mg	75.2	25 - 105				12/11/12
<b>LCS</b>		<b>QC Sample #84918</b>								
Strontium Nitrate	10042-76-9			mg	75.2	25 - 105				12/11/12
<b>DUP</b>		<b>QC Sample #84919</b>								
		<b>Original 121450008</b>								
Strontium Nitrate	10042-76-9			mg	80.2	25 - 105	n/a			12/11/12

\* - QC result out of range

n/a - Not Applicable

ATTACHMENT4

**SAMPLE RECEIPT**

Consisting of 6 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 #: 121454

Profile #: 113-003-101

Proj. Mgr.:

Phone:

The following samples were received from you on 11/13/2012 12:00:00 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
<b>Tests scheduled</b>				
121454001	B2MPH4	WATER	11/13/2012 10:54	11/13/2012 12:00
		IC-W		
121454002	B2MPH5	WATER	11/13/2012 10:54	11/13/2012 12:00
		CR6DA-W		
121454003	B2MML0	WATER	11/13/2012 10:54	11/13/2012 12:00
		ALK-W		
121454004	B2MPH6	WATER	11/13/2012 10:54	11/13/2012 12:00
		2008-W		
121454005	B2MPH3	WATER	11/13/2012 10:54	11/13/2012 12:00
		2008-W; GAB-AO-W; GAB-BO-W; H3-COL-W; SR89/90-W; TC99-W		

**Test Acronym Description**

Test Acronym	Description
2008-W	ICP-MS (W)
ALK-W	Total Alkalinity (W)
CR6DA-W	Cr6 (W Discrete analyzer)
GAB-AO-W	Gross Alpha/Beta (A only)(W)
GAB-BO-W	Gross Alpha/Beta (B only)(W)
H3-COL-W	Tritium by EICHRUM Column (W)
IC-W	Anions by IC (W)
SR89/90-W	Strontium 89/90 (GPC) (W)
TC99-W	Technetium-99 (W)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

113-003-101

Page 1 of 1

Collector	JANELLE ZUNKER	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	113-003	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ESS20
Project Title	100KR4(2), NOVEMBER 2012	Logbook No.	INF-N-506 48 / 89	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	CERCLA	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 5100.5 (1990/1993)  
 SPECIAL INSTRUCTIONS Hold Time 100 Area Generator Knowledge Information form applies. The CACN for all analytical work at WSCF is 401647. FY12 and FY13 samples cannot be in the same SDG.

Sample No.	121454	Date	11-13-12	Time	1054	No./Type Container	1x500-mL P	300 Q_ANIONS_IC: List-1 (5)	Sample Analysis	Holding Time	48 Hours	Preservative	Cool-4C
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Relinquished By	JANELLE ZUNKER	Print	Sign	Date/Time	11/13/2012 10:54	Received By	C. Waters	Print	Sign	Date/Time	11/13/2012 10:54
Relinquished By				Date/Time		Received By				Date/Time	
Relinquished By				Date/Time		Received By				Date/Time	
Relinquished By				Date/Time		Received By				Date/Time	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure used in process)	Disposed By	Date/Time
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- Matrix \*
- S = Soil
  - SE = Sediment
  - SO = Solid
  - SL = Sludge
  - W = Water
  - O = Oil
  - A = Air
  - DS = Drum Solids
  - DL = Drum Liquids
  - T = Tissue
  - WI = Wipe
  - L = Liquid
  - V = Vegetation
  - X = Other

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A-6004-842 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 113-003-102  
Page 1 of 1

Collector: <b>JANELLE ZUNKER</b>	Contact/Requester: <b>Karen Waters-Husted</b>	Telephone No.: <b>376-4650</b>
SAR No.: <b>113-003</b>	Sampling Origin: <b>Hanford Site</b>	Purchase Order/Charge Code: <b>300071ESS20</b>
Project Title: <b>100KR4(2) NOVEMBER 2012</b>	Logbook No.: <b>HNF-N-506 48 / 89</b>	Ice Chest No.: <b>N/A</b>
Shipped To (Lab): <b>Waste Sampling &amp; Characterization</b>	Method of Shipment: <b>GOVERNMENT VEHICLE</b>	Bill of Lading/Air Bill No.: <b>N/A</b>
Protocol: <b>CERCLA</b>	Priority: <b>31 Days</b>	Offsite Property No.: <b>N/A</b>

**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: **100 Area Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 101617. FY12 and FY13 samples cannot be in the same SDC.** Total Activity Exemption: Yes  No

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Hold Time	Holding Time	Preservative
B2MF115	N	11/3-12	1054 AM 11:34 AM 11/11/12	1x500-mL AG	7196_CIN6: Hexavalent Chromium (1)	24 hours	24 hours	Cool-AC

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Relinquished By: <b>JANELLE ZUNKER</b>	<i>Janelle Zunker</i>	<i>Janelle Zunker</i>	NOV 13 2012	Received By: <b>C Johnson</b>	<i>C Johnson</i>	<i>C Johnson</i>	NOV 13 2012	S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air
Relinquished By:			Date/Time	Received By:			Date/Time	DS - Drun Solids DL - Drun Liquids T - Tissue WT - Waste L - Liquid V - Vegetation X - Other
Relinquished By:			Date/Time	Received By:			Date/Time	

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

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A-5004-842 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #  
S13-011-253  
Page 1 of 1

Collector	JANELE ZUNGER	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	S13-011	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ESS20
Project Title	SURV, NOVEMBER 2012	Logbook No.	HNF-N-506 48 / 89	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	CERCLA	Priority:	31 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS		
*** Contains Radioactive Material at concentration that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)			Hold Time		
			FY12 and FY13 samples cannot be in the same SDG. Site-Wide Generator Knowledge Information Form applies. The CACR for all analytical work at WSCF is 401647.		
Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis
B2MML0 3	N	11-13-12	1054	1X250 mL GAP	2320_AKALINITY: Alkalinity (T)
					Holding Time
					14 Days
					Preservative
					Cool-4C

Relinquished By	JANELE ZUNGER	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Relinquished By	<i>Janelle Zunger</i>			Nov 13 2012 1054	<i>C Johnson</i>			11/13/12 1054	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WT = Wipe L = Liquid V = Vegetation X = Other
Relinquished By					Received By				
Relinquished By					Received By				
Relinquished By					Received By				
FINAL SAMPLE DISPOSITION	Disposal Method (e.g. Return to customer, per lab procedure, used in process)			Disposed By	Date/Time				

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A-6004-942 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 113-003-100  
Page 1 of 1

Collector	JANELLE ZUNKER	Contract/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	113-003	Sampling Origin	Hamford Site	Purchase Order/Charge Code	300071ES20
Project Title	100KR4(2) NOVEMBER 2012	Logbook No.	INF-N-506 48/89	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	CERCLA	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 (1990/1995)

SPECIAL INSTRUCTIONS  
 100 Area Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 401647. FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes  No

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2MPH3 5	N	11-13-12	1054	1x500-mL G/P	200 B_METALS_ICPMS: DURA LIST (10)	6 Months	HN03 to pH <2
B2MPH3	N	11-13-12	1054	1x500 mL G/P	ALPHA/BETA_GPC: Alpha discrete + Beta (2)	6 Months	HN03 to pH <2
B2MPH3	N	11-13-12	1054	1x1-L G/P	Strontium-89 90 -- Total Sr	6 Months	HN03 to pH <2
B2MPH3	N	11-13-12	1054	1x1-L G/P	TC99_3MDSK_LSC: Tc-99 (1)	6 Months	HCl to pH <2
B2MPH3	N	11-13-12	1054	1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	6 Months	None
B2MPH6 4	Y	11-13-12	1054	1x500-mL G/P	200 B_METALS_ICPMS: DURA LIST (10)	6 Months	HN03 to pH <2

Relinquished By	JANELLE ZUNKER	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Relinquished By	Janelle Zunker			NOV 13 2012 10:54	Camison			NOV 13 2012 12:00	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By									DS = Drum Salts DL = Drum Liquids T = Tissue WI = Waste L = Landfill V = Vegetation X = Other
Relinquished By									
FINAL SAMPLE DISPOSITION	Disposal Method (e.g. Return to customer, per lab procedure, used in process)								Date/Time

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