

May 22, 2014

Rev. 1

WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352



May 22, 2014

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

Dear Scot Fitzgerald,

REVISED [Report ID: 140405]

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 WSCF140405

- * 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

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ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

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WSCF SAF Number Cross Reference

Group # WSCF140405
Data Deliverable Date 04/03/14

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
S14-012	B2TJN0	140405001	WATER	03/03/14	03/03/14
S14-012	B2TJR5	140405002	WATER	03/03/14	03/03/14

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ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

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Attachment 2
Narrative
WSCF140405 Rev. 1

Revision 1: This case narrative replaces the prior in its entirety. It has been revised in response to RDR-R8206 (attached). The anion sample results for sample B2TJN0 have been corrected and are provided in this revised report.

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), to Contract 39818, Revision 4, "WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

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.
- **o** – LCS recovery outside established laboratory acceptance limits.

Analytical Methodology for Requested Analyses

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Attachment 2
Narrative
WSCF140405 Rev. 1

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 Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Chloride – Exceeded spiking levels by a factor of 4. Spike recoveries and associated RPDs are not valid.
- All other 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.

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Attachment 2
Narrative
 WSCF140405 Rev. 1

RECHECK, RECOUNT, OR REANALYSIS ORDER
 05/15/2014

Order Number: 140515WSCF-R8206

Waste Sampling & Characterization
 600 AREA Hanford, MSIN S3-28
 Richland, WA 99352

Sample Delivery Group:WSCF140405

Sample(s):

Method Name:300.0_ANIONS_IC

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
140405001	5/15/2014 3:37:11 PM	Nitrogen in Nitrate	RECHECK	15 Days / 15 Days
Special Instructions: Probable swapped sample. SLF 05/15/2015				
Sample Delivery Group:WSCF140406				

Sample#: B2TJN0

Sample Date:3/3/2014 12:49:00 PM

SAF #:S14-012

Sample(s):

Method Name:300.0_ANIONS_IC

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
140406001	5/15/2014 3:37:11 PM	Chloride	RECHECK	15 Days / 15 Days
Special Instructions: Probable swapped sample. SLF 05/15/2015				

Sample#: B2TJN1

Sample Date:3/3/2014 8:00:00 AM

SAF #:S14-012

WSCF Response: The chemist reviewed the reported data and screening data for these samples and found they matched and were entered correctly. However, a reanalysis of the samples determined that they were indeed swapped. The results have been revised and the report will now be reissued.

Deliver Report Results to:CHPRC

P.O. Box 1600
 Richland, WA 99352
 C/O Mr.Scot Fitzgerald

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ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 9 pages
Including cover page

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WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600
Richland, WA 99352

Attention: Scot Fitzgerald

Contract # MOA-FH-CHPRC-2008
Group # WSCF140405
Report Date May 22, 2014

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.

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Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140405

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
228935	228935	2	BLANK	106758	BLANK		Anions by Ion Chromatography (Water)
228935	228935	3	LCS	106759	LCS		Anions by Ion Chromatography (Water)
228935	228935	4	MS	106760	B2VY28(140401005MS)	140401005	Anions by Ion Chromatography (Water)
228935	228935	5	MSD	106761	B2VY28(140401005MSD)	140401005	Anions by Ion Chromatography (Water)
228935	228935	8	SAMPLE	140405001	B2TJN0		Anions by Ion Chromatography (Water)
228935	228935	9	SAMPLE	140405002	B2TJR5		Anions by Ion Chromatography (Water)

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Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140405

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-533-410	Anion Analysis by Ion Chromatography		Determination of Inorganic Anions by Ion Chromatography
	EPA-600/R-94-111	300.0	
	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>

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Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140405

Sample # 140405001
 SAF# S14-012
 Sample ID B2TJN0

Matrix WATER
 Sampled 03/03/14
 Received 03/03/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
03/03/14										
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.301		ug/mL	2	0.050	1.0	03/03/14
Chloride	16887-00-6	LA-533-410	D	18.3		ug/mL	2	0.12	0.80	03/03/14
Nitrite-N	NO2-N	LA-533-410	UD	<0.040		ug/mL	2	0.040	0.20	03/03/14
Nitrate-N	NO3-N	LA-533-410	D	4.96		ug/mL	2	0.040	0.20	03/03/14
Phosphate-P	PO4-P	LA-533-410	UD	<0.10		ug/mL	2	0.10	1.0	03/03/14
Sulfate	14808-79-8	LA-533-410	D	45.3		ug/mL	2	0.22	1.1	03/03/14

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.

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Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140405

Sample # 140405002
 SAF# S14-012
 Sample ID B2TJR5

Matrix WATER
 Sampled 03/03/14
 Received 03/03/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
03/03/14										
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.346		ug/mL	2	0.050	1.0	03/03/14
Chloride	16887-00-6	LA-533-410	D	6.70		ug/mL	2	0.12	0.80	03/03/14
Nitrite-N	NO2-N	LA-533-410	UD	<0.040		ug/mL	2	0.040	0.20	03/03/14
Nitrate-N	NO3-N	LA-533-410	UD	<0.040		ug/mL	2	0.040	0.20	03/03/14
Phosphate-P	PO4-P	LA-533-410	UD	<0.10		ug/mL	2	0.10	1.0	03/03/14
Sulfate	14808-79-8	LA-533-410	UD	<0.22		ug/mL	2	0.22	1.1	03/03/14

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.

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Quality Control Report

May 22, 2014

Rev. 1

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140405

Analytical Batch 228935 (QC Batch: 228935) Test Anions by Ion Chromatography (Water)
 Associated Samples 140405001, 140405002

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #106758								
Fluoride	16984-48-8	<0.025		ug/mL					U	03/03/14
Chloride	16887-00-6	<0.060		ug/mL					U	03/03/14
Nitrite-N	NO2-N	<0.020		ug/mL					U	03/03/14
Nitrate-N	NO3-N	<0.020		ug/mL					U	03/03/14
Phosphate-P	PO4-P	<0.050		ug/mL					U	03/03/14
Sulfate	14808-79-8	<0.11		ug/mL					U	03/03/14
LCS		QC Sample #106759								
Fluoride	16984-48-8	0.953		ug/mL	96.3	90 - 110				03/03/14
Chloride	16887-00-6	1.88		ug/mL	95	90 - 110				03/03/14
Nitrite-N	NO2-N	0.983		ug/mL	100.5	90 - 110				03/03/14
Nitrate-N	NO3-N	0.910		ug/mL	102.8	90 - 110				03/03/14
Phosphate-P	PO4-P	1.93		ug/mL	100.8	90 - 110				03/03/14
Sulfate	14808-79-8	3.95		ug/mL	100.6	90 - 110				03/03/14
MS		QC Sample #106760								
		Original 140401005								
Fluoride	16984-48-8	0.928		ug/mL	92.8	80 - 120			D	03/03/14
Chloride	16887-00-6	1.59		ug/mL	79.5	80 - 120			DX	03/03/14

* - QC result out of range

n/a - Not Applicable

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Quality Control Report

May 22, 2014

Rev. 1

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140405

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed	
Nitrite-N	NO2-N		0.925	ug/mL	93.6	80 - 120			D	03/03/14	
Nitrate-N	NO3-N		0.865	ug/mL	96.7	80 - 120			D	03/03/14	
Phosphate-P	PO4-P		1.81	ug/mL	93.9	80 - 120			D	03/03/14	
Sulfate	14808-79-8		3.56	ug/mL	90	80 - 120			D	03/03/14	
MSD		QC Sample #106761									
		Original 140401005					Paired 106760				
Fluoride	16984-48-8		0.898	ug/mL	89.8	80 - 120	2.60	20	D	03/03/14	
Chloride	16887-00-6		1.54	ug/mL	76.8	80 - 120	0.40	20	DX	03/03/14	
Nitrite-N	NO2-N		0.929	ug/mL	94	80 - 120	0.40	20	D	03/03/14	
Nitrate-N	NO3-N		0.836	ug/mL	93.5	80 - 120	0.80	20	D	03/03/14	
Phosphate-P	PO4-P		1.75	ug/mL	90.5	80 - 120	3.70	20	D	03/03/14	
Sulfate	14808-79-8		3.38	ug/mL	85.2	80 - 120	0.30	20	D	03/03/14	

* - QC result out of range

n/a - Not Applicable

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Attention: Scot Fitzgerald

Group #

WSCF140405

Quality Control Comments

Department Inorganic

106760 B2VY28(140401005MS)

Analyte Chloride - Anions by Ion Chromatography (Water)

[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

106761 B2VY28(140401005MSD)

Analyte Chloride - Anions by Ion Chromatography (Water)

[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

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ATTACHMENT4

SAMPLE RECEIPT

Consisting of 4 pages
Including cover page

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Waste Sampling and Characterization Facility
P.O. Box 650 S3-30, Richland WA 99352
Phone: (509) 373-7005/FAX: (509) 372-0456

ACKNOWLEDGEMENT OF SAMPLES RECEIVED

WSCF Laboratory

PO Box 650 S3-30
 Richland, WA 99352

ATTN: Scot Fitzgerald

Customer Code: CHPRC
CA CN: 404540
Work Order #: 140405
Customer Work ID: S14-012-548
Due Date: 04/03/2014

The following samples were received from you on 3/3/2014 3:00:00 PM. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact WSCF Client Services. Thank you for using Waste Sampling and Characterization Facility.

Sample #	Sample ID	Matrix	Collected	Received
140405001	B2TJN0	WATER	3/3/2014 12:49	3/3/2014 15:00
Procedure		Compound List		
Anions by Ion Chromatography (Water)		F,Cl,NO2,NO3,PO4,SO4		
Sample #	Sample ID	Matrix	Collected	Received
140405002	B2TJR5	WATER	3/3/2014 12:00	3/3/2014 15:00
Procedure		Compound List		
Anions by Ion Chromatography (Water)		F,Cl,NO2,NO3,PO4,SO4		

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Chain of Custody

Relinquished By	Relinquished By	Relinquished By	Relinquished By
Retransferred By	Retransferred By	Retransferred By	Retransferred By
Received By	Received By	Received By	Received By
Disposed By	Disposed By	Disposed By	Disposed By

Kalamazoo County
CHPRC
 Date/Time: 3-21-14 1500
 Received By: T. A. ENZLER
 Date/Time: 3-21-14 1500
 Matrix: S = Soil, SE = Sediment, SO = Solid, SE = Sludge, W = Water, A = Air, DS = Dryum Solids, DL = Dryum Liquids, T = Trasse, WI = Wine, L = Liquid, V = Vegetation, X = Other

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: **JC Fulton**
 SAF No.: **S14-012**
 Project Title: **SURV, DECEMBER 2013**
 Shipped To (Lab): **Waste Sampling & Characterization**
 Protocol: **SURV**

Contact/Requester: **Karen Walters-Husted**
 Sampling Origin: **Hanford Site**
 Logbook No.: **HNF-N-506 (a) / 64**
 Method of Shipment: **GOVERNMENT VEHICLE**
 Priority: **31 Days PRIORITY**

Telephone No.: **509-376-4650**
 Purchase Order/Charge Code: **300071ES20**
 Ice Chest No.: **N/A**
 Bill of Lading/Air Bill No.: **N/A**
 Office 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 classifiable per DOE Order 5400.5 (1990/1993).
14D405
 Sample No: **1** Filter: **N** Date: **3-21-14** Time: **1249** No/Type Container: **1x500-ml P**

Sample Analysis: **300.0 ANIONS IC: COMMON; 300.0 ANIONS IC: GW 01**
 Holding Time: **48 Hours**
 Preservative: **Cool-4C**

SPECIAL INSTRUCTIONS: **SPECIAL INSTRUCTIONS**
 Site Wide Generator Knowledge Information Form applies
 The CMCN for analytical work at WSCF is 401580.
 Total Activity Exemption: Yes No

C.O.C. # **S14-012-548**
 Page 1 of 1

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Chain of Custody

Relinquished By JC Fulton CHPRC	<i>[Signature]</i>	Date/Time 5-3-14 1500	Received By TA Frazier <i>[Signature]</i>	Date/Time 5-3-14 1500	Matrix *
Relinquished By	<i>[Signature]</i>	Date/Time	Received By	Date/Time	S = Soil SL = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By	<i>[Signature]</i>	Date/Time	Received By	Date/Time	DS = Dross Solids DL = Drums/Liquids T = Tissue W1 = Wig L = Lead V = Vegetation X = Other
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-0004-042 (REV 2)

CH2M/Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # S14-012-566
Collector JC Fulton CHPRC		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	Page 1 of 1
SAF No. S14-012	Project Title SURV, DECEMBER 2013	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071ESS20	
Shipped To (Lab) Waste Sampling & Characterization	Logbook No. HNF-N-506 41/67	Method of Shipment GOVERNMENT VEHICLE	Ice Chest No. N/A	
Protocol SURV	Priority 31 Days	Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
* * * Contains Radioactive Material of concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)		Hold Time Site Waste Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 409540.		
Sample No. B21UR6	Filter N	Date 3-3-14	Time 1200	Sample Analysis 300.0 ANIONS_IC: COMMON: 300.0 ANIONS_IC: GW_C1
	No/Type Container 1x60-mL P	Sample No.	Sample Analysis	Preservative COO-4C
	Sample No.	Filter	Date	Time

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