

**FINAL REPORT FOR WATER SAMPLES RECEIVED IN  
DECEMBER, 2013 - SAF No. S14-011**

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SDG: 222S20131323**

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Prepared for:

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 . 12-31-2013  
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## 222-S LABORATORY

### FINAL REPORT FOR WATER SAMPLES RECEIVED IN DECEMBER, 2013 SAF No. S14-011

#### 1.0 INTRODUCTION

This final report presents the result for two water samples taken on December 2, 2013. The samples were analyzed in accordance with Sampling Authorization Form S14-011; *Surv, November 2013*, and ATL-MP-1011; *ATL Quality Assurance Project Plan for 222-S Laboratory (QAPP)*. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Quality Control Sample
Attachment 3	Holding Time Report
Attachment 4	Receipt Paperwork

#### 2.0 SAMPLE RECEIPT AND HANDLING

The samples were received on December 2, 2013, with adequate paperwork. The measured temperature at receipt was 0.4 °C.

#### 3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results. The “Det Limit” column in Attachment 1 contains the method detection limit (MDL).

In Attachment 1, the column labeled “A#” indicates the aliquot class or the method used for sample preparation before analysis. For analysis without a preparation step, this column is left blank.

The “Qual Flags” column in Attachments 1 and 2 contain data qualifier flags that are defined as follows:

- “U” indicates that the reported result is less than the MDL
- “B” indicates that the reported result is greater than the MDL, but lower than the estimated quantitation limit (EQL).

Manual calculations using rounded results from the Data Summary Report or result calculation forms may differ slightly from the actual results derived from the raw data.

#### 3.1 ANALYSES

##### 3.1.1 Hexavalent Chromium by Spectrophotometric Determination

The hexavalent chromium analysis was performed on direct aliquots of the samples. Customer sample number B2RRR0 (S13M000148) was analyzed for hexavalent chromium in analytical batch # 44636. Sample B2T1D4 (S13M000142) was used as quality control sample. The RPD (relative percent difference) exceeded the  $\leq 20\%$  requirement; however, since sample and

duplicate results were both below the EQL, this criterion does not apply (see Attachment 2). All other requirements in the SAF and QAPP were met.

### 3.1.2 Anions by Ion Chromatography

The Ion chromatography analysis for anions was performed on direct aliquots of the samples. Customer sample B2T1K3 (S13M000149) was analyzed for Anions in analytical batch #44652. All requirements in the SAF and the QAPP were met.

## 4.0 PROCEDURES

Table 1 lists the analytical procedures used for analysis of the samples.

**Table 1. Analytical Procedures.**

Analysis	Preparation Method	Analysis Procedure
Hexavalent Chromium Analysis by Spectrophotometric Determination	N/A	LA-265-101 Rev. H-0 SW-846 7196A
Anions By Ion Chromatography	N/A	LA-533-166 Rev. B-1-A SW-846 9056A

## 5.0 REFERENCES

ATL-MP-1011, 2013, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 12-B, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

Sampling Authorization Form S14-011; *Surv*, November 2013, CH2M Hill, Plateau Remediation Company, Richland, Washington

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

Attachment 1

DATA SUMMARY REPORT

**DATA SUMMARY REPORT FOR SAMPLE DELIVERY GROUP 20131323**

Customer Sample ID	Laboratory Sample ID	A	CAS #	Analyte	Result Unit	Standard % Recovery	Blank	Result	Duplicate	RPD	Matrix Spike % Recovery	Det Limit	Qual Flags
B2RRR0	S13M000148		18540-29-9	Hexavalent Chromium	ug/mL	103	<9.00E-03	0.105	n/a	n/a	n/a	9.68E-03	
B2T1K3	S13M000149		16984-48-8	Fluoride	ug/mL	99.3	<3.00E-03	0.173	0.199	14.0	98.1	0.0150	
B2T1K3	S13M000149		16887-00-6	Chloride	ug/mL	100	<9.00E-03	6.47	7.36	12.9	104	0.0450	
B2T1K3	S13M000149		14797-65-0	Nitrite	ug/mL	108	<0.0160	<0.0800	<0.0800	n/a	105	0.0800	U
B2T1K3	S13M000149		14808-79-8	Sulfate	ug/mL	99.2	<0.0130	35.3	35.5	0.709	98.4	0.0650	
B2T1K3	S13M000149		14797-55-8	Nitrate	ug/mL	98.6	<9.00E-03	3.35	3.62	7.98	98.3	0.0450	

Attachment 2

QUALITY CONTROL SAMPLE

SDG Number	Customer Sample ID	Customer Sample ID	Laboratory Sample Id	A	CAS #	Analyte	Result Unit	Standard % Recovery	Blank	Result	Duplicate	RPD	Matrix Spike % Recovery	Det Limit	Qual Flags
222S20131328	B2T1D4	B2T1D4	S13M000142		18540-29-9	Hexavalent Chromium	ug/mL	103	<9.00E-03	0.0161	0.0364	77.3	102	9.68E-03	B

NA = Not Analyzed, ND = Not Detected

B - Estimated

Attachment 3

HOLDING TIME REPORT

Ordered by Holding Time

All Hold Times - Status: Not Mailed

Holding Time	Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time	Hold Time Days/Hr Remaining
12/03/13 10:43	20131323	S13M000148	LIQUID	CHROMIUM VI		12/02/13 10:43	12/02/13 14:26	N/A	12/02/13 21:50	N - A	13h
12/04/13 10:43	20131323	S13M000149	LIQUID	IC - ANIONS/SMALL ORG. ACIDS		12/02/13 10:43	12/02/13 14:26	N/A	12/03/13 15:00	N - A	19h

Attachment 4

RECEIPT PAPERWORK

<b>222-S</b>	<b>SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST</b>	ATS-LO-090-101 Rev <u>06-0</u>
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Date Samples Received: 12-2-13 Group #: 20131322  
 Number of Samples: 6 → 2 CEM 12/3/13 20131323 OK ✓  
 Sample Custodian: Sh L Uable

**Sample Custodian to Complete:**

Action	Yes	No	N/A	Comments
RSA/COC provided?	L			
RSR provided?		L		
Verify GKI is complete		L		<input type="checkbox"/> In Project File
Received from an alpha facility?		L		<input type="checkbox"/> Contact PC for approval to release
Check that outer custody seal is intact, if present	L			
Record cooler temperature in centigrade, as appropriate	0.4 <sup>c</sup>			<input type="checkbox"/> Check if no cooler and/or no ice
Samples are intact and in good condition	L			If No, provide comments below
Verify that COC or RSA is accurate and complete, containing the following information:				
• Client name and client sample number	L			
• Date and time of sampling	L			
• Sampling location or origin	L			
• Container type, size, and number	L			
• Preservatives (if used) are noted on the COC/RSA and sample bottle	L			
• Analysis request is clear	L			
• Signature of persons relinquishing and receiving samples	L			
• Date and/or time of sample custody exchange	L			
Verify that sample numbers on containers match the COC and/or RSA	L			
Samples stored properly (e.g., refrigeration)	L			

Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.

Samples acceptable for release? yes PC/SC Initials SHU Date 12-2-13

If No, comment on communication and resolution:

Other Comments:

**DECEMBER 31, 2013**

<b>CH2MHill Plateau Remediation Company</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>	C.O.C. # <b>S14-011-370</b>
Page 1 of 1		

Collector: SCOTT KING	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S14-011	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071ES20
Project Title: SURV, NOVEMBER 2013	Logbook No.: HNF-N-506 <i>101133</i>	Ice Chest No.: N/A
Shipped To (Lab): <del>Waste Sampling &amp; Characterization</del>	Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: N/A
Protocol: SURV <i>222-3 KS 12/2/13</i>	Priority: 31 Days <b>PRIORITY</b>	Offsite Property No.: N/A

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)	<b>SPECIAL INSTRUCTIONS</b> Hold Time      Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Site Wide Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647. FY13 and FY14 samples cannot be in the same SDG.
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2T1K3	N		DEC 02 2013	1043	1x500-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

*PKH*

GRP# *20130*    20131323  
 SAM#            513M006149 ✓

Relinquished By: SCOTT KING <i>[Signature]</i>	Received By: Randy Ellingsworth <i>[Signature]</i>	Matrix * S = Soil            DS = Drum Solids SE = Sediment    DL = Drum Liquids SO = Solid        T = Tissue SL = Sludge        WI = Wipe W = Water         L = Liquid O = Oil            V = Vegetation A = Air             X = Other
Relinquished By: Randy Ellingsworth <i>[Signature]</i>	Received By: Sharon L. Haddley <i>[Signature]</i>	
Relinquished By: _____	Received By: _____	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By
		Date/Time

<b>CH2M Hill Plateau Remediation Company</b>	<b>DECEMBER 31, 2013</b> <b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>	C.O.C. # <b>S14-011-281</b>
Page 1 of 1		

Collector SCOTT KING	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650
SAF No. S14-011	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071ES20
Project Title SURV, NOVEMBER 2013	Logbook No. HNF-N-506 <i>101 / 33</i>	Ice Chest No. N/A
Shipped To (Lab) <del>Waste Sampling &amp; Characterization</del>	Method of Shipment GOVERNMENT VEHICLE	Bill of Lading/Air Bill No. N/A
Protocol SURV <i>222-S LS 12/2/13</i>	Priority: <b>31 Days</b> <b>PRIORITY</b>	Offsite Property No. N/A

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)	<b>SPECIAL INSTRUCTIONS</b> Hold Time      Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Site Wide Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647. FY13 and FY14 samples cannot be in the same SDG.
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2RRR0	N	W	<i>DEC 02 2013</i>	<i>1043</i>	1x500-mL aG	7196_CR6: COMMON	24 Hours	Cool-4C

*GRPT 20131323*  
*SAMT S13M000148*

Relinquished By SCOTT KING <i>[Signature]</i>	Date/Time <i>DEC 02 2013 1400</i>	Received By Randy Ellingsworth <i>[Signature]</i>	Date/Time <i>DEC 02 2013 1400</i>	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquids SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By Randy Ellingsworth <i>[Signature]</i>	Date/Time <i>DEC 02 2013 1426</i>	Received By Sharon Holden <i>[Signature]</i>	Date/Time <i>DEC 02 2013 1426</i> ✓	
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By	Date/Time

**GENERATOR KNOWLEDGE INFORMATION**

1. Chain of Custody Number NA CACN/COA NA Customer Identification Number NA

2. List generator knowledge or description of process that produced sample. Or list description of sample source:  
 Sitewide S&GRP Characterization and Monitoring Sampling and Analysis

MSDS Available?  No  Yes Hanford MSDS No. \_\_\_\_\_

3. List all waste codes and constituents associated with the waste or media that was sampled, regardless of CERCLA status.

a) Does the sample contain any of the following listed waste codes?

**By checking "unknown" the customer understands that no knowledge is available following a careful search.**

List Federal Waste Code(s):

List Constituent(s):

P Codes: \_\_\_\_\_  Yes  No  Unknown

U Codes: \_\_\_\_\_  Yes  No  Unknown

K Codes: \_\_\_\_\_  Yes  No  Unknown

F Codes: F001 - F005; F039  Yes  No  Unknown

b) List applicable characteristic waste codes, flash point, pH, constituents, and concentrations as appropriate.

D001:  FP <100°F  FP ≥100 <140°F  DOT Oxidizer  Yes  No  Unknown

D002:  pH ≤2  pH ≥12.5  Solid Corrosive (WSC2)  Yes  No  Unknown

D003:  Cyanide  Sulfide  Water Reactive  Other \_\_\_\_\_  Yes  No  Unknown

D004-D043 (Identify applicable waste codes and concentrations): \_\_\_\_\_ (i.e., peroxide former, explosive, air reactive)  Yes  No  Unknown

N/A

c) If characteristic, list any known underlying hazardous constituents (UHCs) reasonably expected to be present, and their concentrations that may be present above the LDR treatment standard (40 CFR 268.48):

N/A

d) List any known Land Disposal Restrictions (LDR) subcategories, if applicable (40 CFR 268.40):

N/A

e) List any applicable Washington State dangerous waste codes: (not required if federally regulated)

(\*State mixture rule for ignitability)

WT01:  Yes  No  Unknown

WP01:  Yes  No  Unknown

WT02:  Yes  No  Unknown

WP02:  Yes  No  Unknown

W001:  Yes  No  Unknown

WP03:  Yes  No  Unknown

List constituents and concentrations:

F003:\*  Yes  No  Unknown

N/A

4. Is this material TSCA regulated for PCBs?  Yes  No  Unknown  Analysis Requested

List concentration if applicable: \_\_\_\_\_

If yes, what is the source of the PCBs? (see TSCA PCB Hanford Site User Guide, DOE/RL-2001-50)

- PCB Liquid Waste  PCB Bulk Product Waste  PCB Transformer ≥500 ppm  Unknown
- PCB Remediation Waste  PCB R&D Waste  PCB contaminated electrical equipment (capacitor/ballast) <500 ppm
- PCB Spill Material  PCB Item  Other PCB Waste (list) \_\_\_\_\_

5. Is this material TRU?  Yes  No  Unknown

6. ACCURACY OF INFORMATION

Based on my inquiry of those individuals immediately responsible for obtaining this information, that to the best of my knowledge, the information entered in this document is true, accurate, and complete.

Print & Sign SAJORA / SJ TRENT

Date 12/9/07