

**FINAL REPORT FOR WATER SAMPLES RECEIVED IN
DECEMBER, 2013 - SAF No. I14-005**

**Document No.: 20131338 Rev. 1
SDG: 222S20131338**

Carolina E. Menjivar
Advanced Technologies and Laboratories International, Inc.

Date Published
January 9, 2014

Prepared for:



Prepared by:



| | |
|-----------------------------------|-------------------------|
| CH2M Hill Plateau Remediation Co. | ATL, Inc. |
| P.O. Box 850 | P.O. Box 250 |
| Richland, WA 99352 | Richland, WA 99352-0250 |
| | 509-372-2525 |

 01-09-2014
C.E. Menjivar, ATL Project Coordinator

222-S LABORATORY**FINAL REPORT FOR WATER SAMPLES RECEIVED IN DECEMBER, 2013
SAF No. I14-005****1.0 INTRODUCTION**

This report has been revised to add a discussion about the blank contamination found in the method blank for the Hexavalent Chromium analysis. This was requested by the customer in a problem and discrepancy report included in Attachment 5.

This final report presents the results for five water samples taken on December 3, 2013. The samples were analyzed in accordance with Sampling Authorization Form I14-005; *100KR4, 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 |
| Attachment 5 | Correspondence |

2.0 SAMPLE RECEIPT AND HANDLING

The samples were received on December 3, 2013, with adequate paperwork. The measured temperature at receipt was -0.2°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).
- “C” indicates that the analyte was detected in both the sample and the associated quality control (QC) blank, and the sample concentration was less than five times the blank concentration.

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. Two samples from this sample delivery group were analyzed for hexavalent chromium in analytical batch # 44674. Hexavalent chromium was detected in the initial calibration blank (ICB) at a concentration level below the EQL; therefore, reanalysis was not performed. The result for sample S13M000171 (B2RVP7) was above the EQL, and a “C” flag was applied. The result for sample S13M000172 (B2RTC1) was below the MDL, and no “C” flag was applied. For this analytical method, the EQL is set at 5 times the MDL. All the 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. Three samples from this sample delivery group were analyzed for Anions in analytical batch #44695. Sample B2RX38 (S13M000177) was used as quality control sample (see Attachment 2). 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 I14-005; *100KR4*, 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 20131338

| Customer Sample ID | Laboratory Sample ID | A | CAS # | Analyte | Result Unit | Standard % Recovery | Blank | Result | Duplicate | RPD | Matrix Spike % Recovery | Det Limit | Qual Flags |
|--------------------|----------------------|---|------------|---------------------|-------------|---------------------|-----------|-----------|-----------|------|-------------------------|-----------|------------|
| B2RTC0 | S13M000173 | | 16984-48-8 | Fluoride | ug/mL | 97.3 | <3.00E-03 | 0.130 | n/a | n/a | n/a | 0.0150 | B |
| B2RTC0 | S13M000173 | | 16887-00-6 | Chloride | ug/mL | 99.6 | <9.00E-03 | 1.44 | n/a | n/a | n/a | 0.0450 | |
| B2RTC0 | S13M000173 | | 14797-65-0 | Nitrite | ug/mL | 96.6 | <0.0160 | <0.0800 | n/a | n/a | n/a | 0.0800 | U |
| B2RTC0 | S13M000173 | | 14808-79-8 | Sulfate | ug/mL | 100 | 0.0630 | 11.4 | n/a | n/a | n/a | 0.0650 | |
| B2RTC0 | S13M000173 | | 14797-55-8 | Nitrate | ug/mL | 99.4 | <9.00E-03 | 0.902 | n/a | n/a | n/a | 0.0450 | B |
| B2RTC1 | S13M000172 | | 18540-29-9 | Hexavalent Chromium | ug/mL | 106 | 0.0207 | <9.68E-03 | n/a | n/a | n/a | 9.68E-03 | U |
| B2RVM1 | S13M000175 | | 16984-48-8 | Fluoride | ug/mL | 97.3 | <3.00E-03 | 0.110 | n/a | n/a | n/a | 0.0150 | B |
| B2RVM1 | S13M000175 | | 16887-00-6 | Chloride | ug/mL | 99.6 | <9.00E-03 | 16.2 | n/a | n/a | n/a | 0.0450 | |
| B2RVM1 | S13M000175 | | 14797-65-0 | Nitrite | ug/mL | 96.6 | <0.0160 | <0.0800 | n/a | n/a | n/a | 0.0800 | U |
| B2RVM1 | S13M000175 | | 14808-79-8 | Sulfate | ug/mL | 100 | 0.0630 | 41.2 | n/a | n/a | n/a | 0.0650 | |
| B2RVM1 | S13M000175 | | 14797-55-8 | Nitrate | ug/mL | 99.4 | <9.00E-03 | 10.7 | n/a | n/a | n/a | 0.0450 | |
| B2RVP6 | S13M000174 | | 16984-48-8 | Fluoride | ug/mL | 97.3 | <3.00E-03 | 0.102 | n/a | n/a | n/a | 0.0150 | B |
| B2RVP6 | S13M000174 | | 16887-00-6 | Chloride | ug/mL | 99.6 | <9.00E-03 | 14.5 | n/a | n/a | n/a | 0.0450 | |
| B2RVP6 | S13M000174 | | 14797-65-0 | Nitrite | ug/mL | 96.6 | <0.0160 | <0.0800 | n/a | n/a | n/a | 0.0800 | U |
| B2RVP6 | S13M000174 | | 14808-79-8 | Sulfate | ug/mL | 100 | 0.0630 | 55.7 | n/a | n/a | n/a | 0.0650 | |
| B2RVP6 | S13M000174 | | 14797-55-8 | Nitrate | ug/mL | 99.4 | <9.00E-03 | 23.6 | n/a | n/a | n/a | 0.0450 | |
| B2RVP7 | S13M000171 | | 18540-29-9 | Hexavalent Chromium | ug/mL | 106 | 0.0207 | 0.0812 | 0.0836 | 2.89 | 102 | 9.68E-03 | C |

Attachment 2

QUALITY CONTROL SAMPLE

17-dec-2013 14:33:30

DSR.Jar v. 2.7.31

WSCF Diversion FY14

Data Summary Report

| SDG Number | Customer Sample ID | Laboratory Sample ID | A | CAS # | Analyte | Result Unit | Standard % Recovery | Blank | Result | Duplicate | RPD | Matrix Spike % Recovery | Det Limit | Qual Flags |
|--------------|--------------------|----------------------|---|------------|----------|-------------|---------------------|-----------|---------|-----------|-------|-------------------------|-----------|------------|
| 222S20131339 | B2RX38 | S13M000177 | | 16984-48-8 | Fluoride | ug/mL | 93.9 | <3.00E-03 | 0.110 | 0.109 | 0.913 | 95.2 | 3.00E-03 | |
| 222S20131339 | B2RX38 | S13M000177 | | 16887-00-6 | Chloride | ug/mL | 96.3 | <9.00E-03 | 1.92 | 1.90 | 0.732 | 96.1 | 9.00E-03 | |
| 222S20131339 | B2RX38 | S13M000177 | | 14797-65-0 | Nitrite | ug/mL | 102 | <0.0160 | <0.0160 | <0.0160 | n/a | 90.0 | 0.0160 | U |
| 222S20131339 | B2RX38 | S13M000177 | | 14808-79-8 | Sulfate | ug/mL | 99.1 | 0.0660 | 17.9 | 17.8 | 0.645 | 92.6 | 0.0130 | |
| 222S20131339 | B2RX38 | S13M000177 | | 14797-55-8 | Nitrate | ug/mL | 98.6 | <9.00E-03 | 2.62 | 2.63 | 0.458 | 90.7 | 9.00E-03 | |

NA = Not Analyzed, ND = Not Detected

U - < Det Limit

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 |
|----------------|--------------|------------|--------|---------------------------------|-------------|----------------|----------------|-----------|----------------|---------------------|-----------------------------|
| 12/04/13 09:38 | 20131338 | S13M000171 | LIQUID | CHROMIUM VI | | 12/03/13 09:38 | 12/03/13 13:55 | N/A | 12/04/13 08:05 | N - A | 1h |
| 12/04/13 11:23 | 20131338 | S13M000172 | LIQUID | CHROMIUM VI | | 12/03/13 11:23 | 12/03/13 13:55 | N/A | 12/04/13 08:05 | N - A | 3h |
| 12/05/13 09:38 | 20131338 | S13M000174 | LIQUID | IC - ANIONS/SMALL ORG. ACIDS | | 12/03/13 09:38 | 12/03/13 13:55 | N/A | 12/04/13 20:35 | N - A | 13h |
| 12/05/13 11:23 | 20131338 | S13M000173 | LIQUID | IC - ANIONS/SMALL ORG. ACIDS | | 12/03/13 11:23 | 12/03/13 13:55 | N/A | 12/04/13 20:02 | N - A | 15h |
| 12/05/13 13:09 | 20131338 | S13M000175 | LIQUID | IC - ANIONS/SMALL ORG. ACIDS | | 12/03/13 13:09 | 12/03/13 14:30 | N/A | 12/04/13 21:09 | N - A | 16h |

Attachment 4

RECEIPT PAPERWORK

JANUARY 9, 2014

| | | |
|--------------|---|--------------------------------|
| 222-S | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | ATS-LO-090-101 Rev <u>06.0</u> |
|--------------|---|--------------------------------|

Date Samples Received: 12-3-2013 Group #: 20131338
 Number of Samples: 2 → 5 CEM 12/4/13
 Sample Custodian: [Signature]

Sample Custodian to Complete:

| Action | Yes | No | N/A | Comments |
|--|-----|----|---------|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | | ✓ | | |
| Verify GKI is complete | | ✓ | | <input checked="" type="checkbox"/> In Project File |
| Received from an alpha facility? | | ✓ | | <input type="checkbox"/> Contact PC for approval to release |
| Check that outer custody seal is intact, if present | ✓ | | | |
| Record cooler temperature in centigrade, as appropriate | | | 00/-0.2 | <input type="checkbox"/> Check if no cooler and/or no ice |
| Samples are intact and in good condition | ✓ | | | If No, provide comments below |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | | ✓ | | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

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 [Signature] Date 12-3-2013
 If No, comment on communication and resolution:

Other Comments:

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **JANUARY 9, 2014**
114-005-343

Page 1 of 1

| | | | | | |
|------------------|--|--------------------|-------------------------|-----------------------------|--------------|
| Collector | SCOTT KING | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | 114-005 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071ES20 |
| Project Title | 100KR4, NOVEMBER 2013 | Logbook No. | HNF-N-506 <u>01134</u> | 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 <u>222-5 ks 12/3/13</u> | Priority: | 31 Days PRIORITY | Offsite Property No. | N/A |

POSSIBLE SAMPLE HAZARDS/REMARKS

*** 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)

SPECIAL INSTRUCTIONS

100 Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 401647.
FY13 & FY14 SAFs cannot be in the same SDG.

Hold Time

Total Activity Exemption: Yes No

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|-------------|------|-------------------|------------------------------|--------------|--------------|
| B2RVP7 | ✓ | N | DEC 03 2013 | 0938 | ✓ | 1x500-mL aG 7196_CR6: COMMON | 24 Hours | Cool-4C |

Group # 2013 1338
Sample # S13M000 172 SW
12/3/13

| | | | | | | | | |
|--------------------------|--|------|------------------|-----------------|-------|------|------------------|--|
| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time | 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 |
| SCOTT KING | | | DEC 03 2013 1330 | | | | DEC 03 2013 1330 | |
| Relinquished By | | | Date/Time | Received By | | | Date/Time | |
| | | | 12/3/13 1355 | Sharon L. Uldes | | | 12-3-13 1355 | |
| 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 | |

| | | |
|--|---|---|
| CH2M Hill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | JANUARY 9, 2014 I14-005-163 Page 1 of 1 |
|--|---|---|

| | | |
|--|--|--|
| Collector <i>SCOTT KING</i> | Contact/Requester Karen Waters-Husted | Telephone No. 509-376-4650 |
| SAF No. I14-005 | Sampling Origin Hanford Site | Purchase Order/Charge Code 300071ES20 |
| Project Title 100KR4, NOVEMBER 2013 | Logbook No. HNF-N-506 <i>101 134</i> | Ice Chest No. N/A |
| Shipped To (Lab) <u>Waste Sampling & Characterization</u> | Method of Shipment GOVERNMENT VEHICLE | Bill of Lading/Air Bill No. N/A |
| Protocol CERCLA <i>222-5 25 12/3/13</i> | Priority: 31 Days PRIORITY | Offsite Property No. N/A |

| | |
|--|--|
| POSSIBLE SAMPLE HAZARDS/REMARKS *** 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) | SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 100 Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 401647. FY13 & FY14 SAFs cannot be in the same SDG. |
|--|--|

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|--------------------|-------------|-------------------|------------------------------|--------------|--------------|
| B2RTC1 | ✓ | N | <i>DEC 03 2013</i> | <i>1123</i> | ✓ | 1x500-mL aG 7196_CR6: COMMON | 24 Hours | Cool-4C |

Group # 20131338 ✓
Sample # S13M000172 ✓

| | | | | | | | | |
|--|-------|--|--------------------------------------|--|-------|-------------|--------------------------------------|--|
| Relinquished By <i>SCOTT KING</i> <i>Scott King</i> | Print | Sign | Date/Time <i>DEC 03 2013 1330</i> | Received By <i>REllingsworth</i> <i>RJ</i> | Print | Sign | Date/Time <i>DEC 03 2013 1330</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 <i>REllingsworth</i> <i>RJ</i> | | | Date/Time <i>12/3/13 1355</i> | Received By <i>Sharon Wade</i> <i>Sharon Wade</i> | | | Date/Time <i>12/3/13 1355</i> | |
| 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 |

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

JANUARY 9, 2014
 COC # 114-005-162

Page 1 of 1

| | | | | | |
|------------------|-----------------------------------|--------------------|---------------------|-----------------------------|--------------|
| Collector | SCOTT KING | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | I14-005 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071ES20 |
| Project Title | 100KR4, NOVEMBER 2013 | Logbook No. | HNF-N-50601 / 34 | 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 222-S KS 12/3/13 | Priority: | 31 Days PRIORITY | Offsite Property No. | N/A |

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** 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)

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647.
 FY13 & FY14 SAFs cannot be in the same SDG.

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative | |
|------------|--------|---|------|-------------|-------------------|-----------------|-------------------------|--------------|---------|
| B2RTC0 | / | N | W | DEC 03 2013 | 1123 | 1x500-mL P | 300.0_ANIONS_IC: COMMON | 48 Hours | Cool-4C |

Group I 20131338
 Sample # 513M000173

| | | | | |
|--|--|--|----------------------------------|---|
| Relinquished By SCOTT KING <i>Scott King</i> | Date/Time DEC 03 2013 1330 | Received By R Ellingsworth <i>R Ellingsworth</i> | Date/Time DEC 03 2013 1330 | 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 R Ellingsworth <i>R Ellingsworth</i> | Date/Time 12/3/13 1355 | Received By Sharon Holden <i>Sharon Holden</i> | Date/Time 12/3/13 1355 | |
| 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 |

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

JANUARY 9, 2014
COG.# 2014
114-005-342

Page 1 of 1

| | | | | | |
|------------------|--|--------------------|-------------------------|-----------------------------|--------------|
| Collector | SCOTT KING | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | I14-005 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071ES20 |
| Project Title | 100KR4, NOVEMBER 2013 | Logbook No. | HNF-N-506 <i>601134</i> | 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 <i>222-S KS 12/3/13</i> | Priority: | 31 Days PRIORITY | Offsite Property No. | N/A |

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** 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)

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647.
 FY13 & FY14 SAFs cannot be in the same SDG.

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|--------------------|-------------|-------------------|------------------------------------|--------------|--------------|
| B2RVP6 | ✓ | N | <i>DEC 03 2013</i> | <i>0938</i> | ✓ | 1x500-mL P 300.0_ANIONS_IC: COMMON | 48 Hours | Cool-4C |

*Group # 20131338 ✓
 Sample # S13m000174 ✓*

| | | | | | | | | |
|---------------------------------|--|----------------------|-------------------------|---------------|--------------------|--------------------|-------------------------|---|
| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time | Matrix * |
| SCOTT KING | <i>Scott King</i> | <i>[Signature]</i> | <i>DEC 03 2013 1350</i> | <i>Fulton</i> | <i>[Signature]</i> | <i>[Signature]</i> | <i>DEC 03 2013 1350</i> | 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 | Date/Time | Received By | Date/Time | | | | | |
| <i>Fulton</i> | <i>12/3/13 1355</i> | <i>Sharon Holden</i> | <i>12/13/13 1355</i> | | | | | |
| 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 | | | |

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

JANUARY 9, 2014
 COS: #2014
 114-005-333

Page 1 of 1

| | | | | | |
|------------------|-----------------------------------|--------------------|---------------------|-----------------------------|--------------|
| Collector | SCOTT KING | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | I14-005 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071ES20 |
| Project Title | 100KR4, NOVEMBER 2013 | Logbook No. | HNF-N-50661 / 34 | 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 202-5 SK-12-313 | Priority: | 31 Days PRIORITY | Offsite Property No. | N/A |

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** 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)

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 100 Area Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 401647.
 FY13 & FY14 SAFs cannot be in the same SDG.

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|-------------|------|-------------------|-------------------------|--------------|--------------|
| B2RVM1 ✓ | N | W | DEC 03 2013 | 1309 | 1x500-mL P | 300.0_ANIONS_IC: COMMON | 48 Hours | Cool-4C |

Group # 20131338 ✓
 Sample # S13M000175 ✓

| | | | | | | |
|---------------------------------|--|------------------|-----------------|------------------------|------------------|--|
| Relinquished By | Print Sign | Date/Time | Received By | Print Sign | Date/Time | 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 |
| SCOTT KING | <i>Scott King</i> | DEC 03 2013 1430 | Sharon L Holder | <i>Sharon L Holder</i> | DEC 03 2013 1430 | |
| 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 | |

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:
100 Area 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: _____ | _____ | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Unknown |
| U Codes: _____ | _____ | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Unknown |
| K Codes: _____ | _____ | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Unknown |
| F Codes: _____ | _____ | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Unknown |

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

| | | | | | |
|---|---|---|--|-------------------------------------|-------------------------------------|
| D001: <input type="checkbox"/> FP <100°F | <input type="checkbox"/> FP ≥100 <140°F | <input type="checkbox"/> DOT Oxidizer | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Unknown |
| D002: <input type="checkbox"/> pH ≤2 | <input type="checkbox"/> pH ≥12.5 | <input type="checkbox"/> Solid Corrosive (WSC2) | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Unknown |
| D003: <input type="checkbox"/> Cyanide | <input type="checkbox"/> Sulfide | <input type="checkbox"/> Water Reactive | <input type="checkbox"/> Other _____ | <input type="radio"/> Yes | <input checked="" type="radio"/> No |
| D004-D043 (Identify applicable waste codes and concentrations): | | | (i.e., peroxide former, explosive, air reactive) | | |
| | | | <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> 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: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown | WP01: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown |
| WT02: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown | WP02: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown |
| W001: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown | WP03: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown |
| List constituents and concentrations: | F003*: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> 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)

| | | | |
|--|---|---|----------------------------------|
| <input type="checkbox"/> PCB Liquid Waste | <input type="checkbox"/> PCB Bulk Product Waste | <input type="checkbox"/> PCB Transformer ≥500 ppm | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> PCB Remediation Waste | <input type="checkbox"/> PCB R&D Waste | <input type="checkbox"/> PCB contaminated electrical equipment (capacitor/ballast) <500 ppm | |
| <input type="checkbox"/> PCB Spill Material | <input type="checkbox"/> PCB Item | <input type="checkbox"/> 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 SJ TRENT / [Signature] Date 12/3/07

Attachment 5

CORRESPONDENCE

Problem and Discrepancy Report

222S

SDG 222S20131338

1. The data package has the following issues:

- a) The Hex Chrome QC is missing from attachment 2, and the blank contamination is not discussed in the narrative.

Resolution: *Provide appropriate corrections*

Lab Response: **The Hex Chrome QC was already included in the data summary report (see Attachment 1). The QC sample for Hex Chrome was S13M000171. The blank contamination discussion is added to the report and a Revision 1 of the report is submitted.**

Please correct the issue and resubmit the hard copy data package.