0092231

# SAF-RC-174
# ARRA Remaining Sites Confirmation Sampling – Soil Full Protocol
# FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt H4-21 KW 12/1/10
INITIAL/DATE

**COMMENTS:**

**SDG J00923 SAF-RC-174**

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

**Sample Location: 100-K-90 Surface Sample**

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# ANALYTICAL REPORT

RECEIVED NOV 2010

Job Number: 280-9732-1

SDG Number: J00923

Job Description: SAF# RC-174

For:
Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

Attention: Joan H Kessner

Approved for release.
Kae E Yoder
Project Manager II
11/29/2010 3:10 PM

Kae E Yoder
Project Manager II
kae.yoder@testamericainc.com
11/29/2010

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

**TestAmerica Laboratories, Inc.**
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ACCREDITED IN ACCORDANCE WITH nelac

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# CASE NARRATIVE

## Client: Washington Closure Hanford

## Project: WASHINGTON CLOSURE HANFORD

## Report Number: 280-9732-1

**SDG #: J00923**
**SAF#: RC-174**

**Date SDG Closed: November 12, 2010**
**Data Deliverable: 15 Day / Summary**

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|---|---|---|---|
| J1B526 | 280-9732-1 | 6010/7471 | 6010B/7471A |

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

**RECEIPT**
The sample was received on 11/12/2010; the sample arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 1.6 C, 1.8 C and 2.0 C.

**TOTAL METALS - SW846 6010B/7471A**
Low levels of Aluminum, Barium, Calcium and Magnesium are present in the method blank associated with batch 280-41034. Because the concentrations in the method blank are not present at levels greater than the reporting limits, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "J".

The Matrix Spike performed on sample J1B526 exhibited percent recoveries outside the control limits for Aluminum and Silicon, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Iron in the Matrix Spike performed on sample J1B526; therefore, control limits are not applicable.

The duplicate analysis of sample J1B526 exhibited RPD data outside the control limits for Beryllium, Cobalt, Iron, Lead and Vanadium, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

| Lab Section | Qualifier | Description |
|---|---|---|
| Metals | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | J | Method blank contamination. The assoicated method blank contains the target analyte at a reportable level. |
| | 4 | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |
| | N | Recovery exceeds upper or lower control limits |
| | M | Sample duplicate precision not met. |
| | C | The analyte was detected in both the sample and the assoicated QC blank, and the sample concentration was </= 5X the blank concentration. |

# METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Solid** | | | |
| Metals (ICP) | TAL DEN | SW846 6010B | |
| Preparation, Metals | TAL DEN | | SW846 3050B |
| Mercury (CVAA) | TAL DEN | SW846 7471A | |
| Preparation, Mercury | TAL DEN | | SW846 7471A |
| ASTM D-2216 | TAL DEN | ASTM D-2216 | |

**Lab References:**

TAL DEN = TestAmerica Denver

**Method References:**

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 6010B | Bowen, Heidi E | HEB |
| SW846 7471A | Stoltz, Katie | KS |
| ASTM D-2216 | Berry III, Paul B | PBB |

## SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 280-9732-1 | J1B526 | Solid | 11/10/2010 1015 | 11/12/2010 0900 |

# SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Client Sample ID:** **J1B526**

Lab Sample ID: 280-9732-1
Client Matrix: Solid
% Moisture: 0.1

Date Sampled: 11/10/2010 1015
Date Received: 11/12/2010 0900

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-42187 | | Instrument ID: | MT_026 |
| Preparation: | 3050B | Prep Batch: 280-41034 | | Lab File ID: | 26a111910.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.06 g |
| Date Analyzed: | 11/19/2010 2012 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 11/19/2010 0800 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 209 | J N | 1.5 | 4.7 |
| Antimony | | 0.36 | U | 0.36 | 0.57 |
| Arsenic | | 0.62 | U | 0.62 | 0.94 |
| Barium | | 2.0 | J | 0.072 | 0.47 |
| Beryllium | | 0.061 | B M | 0.031 | 0.19 |
| Boron | | 0.93 | U | 0.93 | 1.9 |
| Cadmium | | 0.039 | U | 0.039 | 0.19 |
| Calcium | | 50.9 | J C | 13.3 | 47.2 |
| Chromium | | 0.055 | U | 0.055 | 0.19 |
| Cobalt | | 0.15 | B M | 0.094 | 0.94 |
| Copper | | 0.27 | B | 0.20 | 0.94 |
| Iron | | 558 | M | 3.6 | 4.7 |
| Lead | | 0.37 | B M | 0.26 | 0.47 |
| Magnesium | | 33.1 | J | 3.5 | 18.9 |
| Manganese | | 5.9 | | 0.094 | 0.94 |
| Molybdenum | | 0.25 | U | 0.25 | 1.9 |
| Nickel | | 0.20 | B | 0.12 | 3.8 |
| Potassium | | 61.6 | B | 38.7 | 283 |
| Selenium | | 0.96 | | 0.81 | 0.94 |
| Silicon | | 193 | N | 2.0 | 9.4 |
| Silver | | 0.15 | U | 0.15 | 0.19 |
| Sodium | | 55.7 | U | 55.7 | 113 |
| Vanadium | | 0.57 | B M | 0.089 | 1.9 |
| Zinc | | 1.8 | | 0.38 | 0.94 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-41892 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-40983 | | Lab File ID: | 101118AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.61 g |
| Date Analyzed: | 11/18/2010 1423 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 11/18/2010 0900 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0054 | U | 0.0054 | 0.017 |

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**General Chemistry**

**Client Sample ID:** **J1B526**

Lab Sample ID: 280-9732-1
Client Matrix: Solid

Date Sampled: 11/10/2010 1015
Date Received: 11/12/2010 0900

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Percent Moisture | 0.13 | | % | 0.10 | 0.10 | 1.0 | D-2216 |

Analysis Batch: 280-40942 Date Analyzed: 11/15/2010 1016 DryWt Corrected: N

# QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Prep Batch: 280-40983** | | | | | |
| LCS 280-40983/2-A | Lab Control Sample | T | Solid | 7471A | |
| MB 280-40983/1-A | Method Blank | T | Solid | 7471A | |
| 280-9732-1 | J1B526 | T | Solid | 7471A | |
| 280-9732-1DU | Duplicate | T | Solid | 7471A | |
| 280-9732-1MS | Matrix Spike | T | Solid | 7471A | |
| **Prep Batch: 280-41034** | | | | | |
| LCS 280-41034/2-A | Lab Control Sample | T | Solid | 3050B | |
| MB 280-41034/1-A | Method Blank | T | Solid | 3050B | |
| 280-9732-1 | J1B526 | T | Solid | 3050B | |
| 280-9732-1DU | Duplicate | T | Solid | 3050B | |
| 280-9732-1MS | Matrix Spike | T | Solid | 3050B | |
| **Analysis Batch:280-41892** | | | | | |
| LCS 280-40983/2-A | Lab Control Sample | T | Solid | 7471A | 280-40983 |
| MB 280-40983/1-A | Method Blank | T | Solid | 7471A | 280-40983 |
| 280-9732-1 | J1B526 | T | Solid | 7471A | 280-40983 |
| 280-9732-1DU | Duplicate | T | Solid | 7471A | 280-40983 |
| 280-9732-1MS | Matrix Spike | T | Solid | 7471A | 280-40983 |
| **Analysis Batch:280-42187** | | | | | |
| LCS 280-41034/2-A | Lab Control Sample | T | Solid | 6010B | 280-41034 |
| MB 280-41034/1-A | Method Blank | T | Solid | 6010B | 280-41034 |
| 280-9732-1 | J1B526 | T | Solid | 6010B | 280-41034 |
| 280-9732-1DU | Duplicate | T | Solid | 6010B | 280-41034 |
| 280-9732-1MS | Matrix Spike | T | Solid | 6010B | 280-41034 |

**Report Basis**
T = Total

**General Chemistry**

| | | | | | |
|---|---|---|---|---|---|
| **Analysis Batch:280-40942** | | | | | |
| 280-9732-1 | J1B526 | T | Solid | D-2216 | |
| 280-9732-1DU | Duplicate | T | Solid | D-2216 | |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Method Blank - Batch: 280-41034**

**Method: 6010B**
**Preparation: 3050B**

Lab Sample ID: MB 280-41034/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/19/2010 2007
Date Prepared: 11/19/2010 0800

Analysis Batch: 280-42187
Prep Batch: 280-41034
Units: mg/Kg

Instrument ID: MT_026
Lab File ID: 26a111910.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aluminum | 1.76 | B | 1.6 | 5.0 |
| Antimony | 0.38 | U | 0.38 | 0.60 |
| Arsenic | 0.66 | U | 0.66 | 1.0 |
| Barium | 0.129 | B | 0.076 | 0.50 |
| Beryllium | 0.033 | U | 0.033 | 0.20 |
| Boron | 0.98 | U | 0.98 | 2.0 |
| Cadmium | 0.041 | U | 0.041 | 0.20 |
| Calcium | 16.52 | B | 14.1 | 50.0 |
| Chromium | 0.058 | U | 0.058 | 0.20 |
| Cobalt | 0.10 | U | 0.10 | 1.0 |
| Copper | 0.22 | U | 0.22 | 1.0 |
| Iron | 3.8 | U | 3.8 | 5.0 |
| Lead | 0.27 | U | 0.27 | 0.50 |
| Magnesium | 4.17 | B | 3.7 | 20.0 |
| Manganese | 0.10 | U | 0.10 | 1.0 |
| Molybdenum | 0.26 | U | 0.26 | 2.0 |
| Nickel | 0.12 | U | 0.12 | 4.0 |
| Potassium | 41.0 | U | 41.0 | 300 |
| Selenium | 0.86 | U | 0.86 | 1.0 |
| Silicon | 2.1 | U | 2.1 | 10.0 |
| Silver | 0.16 | U | 0.16 | 0.20 |
| Sodium | 59.0 | U | 59.0 | 120 |
| Vanadium | 0.094 | U | 0.094 | 2.0 |
| Zinc | 0.40 | U | 0.40 | 1.0 |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Lab Control Sample - Batch: 280-41034**

**Method: 6010B**
**Preparation: 3050B**

Lab Sample ID: LCS 280-41034/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/19/2010 2010
Date Prepared: 11/19/2010 0800

Analysis Batch: 280-42187
Prep Batch: 280-41034
Units: mg/Kg

Instrument ID: MT_026
Lab File ID: 26a111910.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aluminum | 200 | 191.5 | 96 | 82 - 116 | |
| Antimony | 50.0 | 47.56 | 95 | 82 - 110 | |
| Arsenic | 100 | 97.61 | 98 | 85 - 110 | |
| Barium | 200 | 188.0 | 94 | 87 - 112 | |
| Beryllium | 5.00 | 4.51 | 90 | 84 - 114 | |
| Boron | 100 | 95.61 | 96 | 81 - 110 | |
| Cadmium | 10.0 | 9.87 | 99 | 87 - 110 | |
| Calcium | 5000 | 4648 | 93 | 82 - 114 | |
| Chromium | 20.0 | 19.50 | 98 | 84 - 114 | |
| Cobalt | 50.0 | 48.40 | 97 | 87 - 110 | |
| Copper | 25.0 | 23.59 | 94 | 88 - 110 | |
| Iron | 100 | 89.73 | 90 | 87 - 120 | |
| Lead | 50.0 | 47.98 | 96 | 86 - 110 | |
| Magnesium | 5000 | 4671 | 93 | 90 - 110 | |
| Manganese | 50.0 | 47.15 | 94 | 88 - 110 | |
| Molybdenum | 100 | 96.50 | 96 | 86 - 110 | |
| Nickel | 50.0 | 46.51 | 93 | 87 - 110 | |
| Potassium | 5000 | 4820 | 96 | 89 - 110 | |
| Selenium | 200 | 197.9 | 99 | 83 - 110 | |
| Silicon | 1000 | 104.5 | 10 | 10 - 70 | |
| Silver | 5.00 | 5.10 | 102 | 87 - 114 | |
| Sodium | 5000 | 4746 | 95 | 90 - 112 | |
| Vanadium | 50.0 | 46.77 | 94 | 88 - 110 | |
| Zinc | 50.0 | 49.11 | 98 | 76 - 114 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Matrix Spike - Batch: 280-41034**

**Method: 6010B**
**Preparation: 3050B**

Lab Sample ID: 280-9732-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/19/2010 2019
Date Prepared: 11/19/2010 0800

Analysis Batch: 280-42187
Prep Batch: 280-41034
Units: mg/Kg

Instrument ID: MT_026
Lab File ID: 26a111910.asc
Initial Weight/Volume: 1.03 g
Final Weight/Volume: 100 mL

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Aluminum | 209 | | 194 | 922.7 | 367 | 50 - 200 | N |
| Antimony | 0.36 | U | 48.6 | 45.96 | 95 | 20 - 200 | |
| Arsenic | 0.62 | U | 97.2 | 97.32 | 100 | 76 - 111 | |
| Barium | 2.0 | | 194 | 189.1 | 96 | 52 - 159 | |
| Beryllium | 0.061 | B | 4.86 | 4.49 | 91 | 72 - 105 | |
| Boron | 0.93 | U | 97.2 | 94.67 | 97 | 75 - 107 | |
| Cadmium | 0.039 | U | 9.72 | 9.76 | 100 | 40 - 130 | |
| Calcium | 50.9 | | 4860 | 4638 | 94 | 43 - 165 | |
| Chromium | 0.055 | U | 19.4 | 19.37 | 100 | 70 - 200 | |
| Cobalt | 0.15 | B | 48.6 | 47.66 | 98 | 72 - 106 | |
| Copper | 0.27 | B | 24.3 | 23.46 | 95 | 37 - 187 | |
| Iron | 558 | | 97.2 | 474.9 | -85 | 70 - 200 | 4 |
| Lead | 0.37 | B | 48.6 | 47.91 | 98 | 70 - 200 | |
| Magnesium | 33.1 | | 4860 | 4686 | 96 | 64 - 145 | |
| Manganese | 5.9 | | 48.6 | 51.99 | 95 | 40 - 200 | |
| Molybdenum | 0.25 | U | 97.2 | 94.75 | 97 | 75 - 103 | |
| Nickel | 0.20 | B | 48.6 | 45.90 | 94 | 61 - 126 | |
| Potassium | 61.6 | B | 4860 | 4858 | 99 | 56 - 172 | |
| Selenium | 0.96 | | 194 | 197.2 | 101 | 76 - 104 | |
| Silicon | 193 | | 972 | 342.9 | 15 | 20 - 200 | N |
| Silver | 0.15 | U | 4.86 | 5.07 | 104 | 75 - 141 | |
| Sodium | 55.7 | U | 4860 | 4730 | 97 | 78 - 111 | |
| Vanadium | 0.57 | B | 48.6 | 46.82 | 95 | 50 - 169 | |
| Zinc | 1.8 | | 48.6 | 50.39 | 100 | 70 - 200 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Duplicate - Batch: 280-41034**

**Method: 6010B**
**Preparation: 3050B**

Lab Sample ID: 280-9732-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/19/2010 2017
Date Prepared: 11/19/2010 0800

Analysis Batch: 280-42187
Prep Batch: 280-41034
Units: mg/Kg

Instrument ID: MT_026
Lab File ID: 26a111910.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Aluminum | 209 | | 200.9 | 4 | 40 | |
| Antimony | 0.36 | U | 0.32 | NC | 40 | U |
| Arsenic | 0.62 | U | 0.56 | NC | 30 | U |
| Barium | 2.0 | | 2.21 | 8 | 30 | |
| Beryllium | 0.061 | B | 0.0416 | 38 | 30 | B M |
| Boron | 0.93 | U | 0.83 | NC | 30 | U |
| Cadmium | 0.039 | U | 0.035 | NC | 30 | U |
| Calcium | 50.9 | | 47.00 | 8 | 30 | |
| Chromium | 0.055 | U | 0.049 | NC | 40 | U |
| Cobalt | 0.15 | B | 0.103 | 39 | 30 | B M |
| Copper | 0.27 | B | 0.18 | NC | 30 | U |
| Iron | 558 | | 313.8 | 56 | 40 | M |
| Lead | 0.37 | B | 0.571 | 42 | 40 | M |
| Magnesium | 33.1 | | 25.81 | 25 | 30 | |
| Manganese | 5.9 | | 4.88 | 19 | 40 | |
| Molybdenum | 0.25 | U | 0.22 | NC | 30 | U |
| Nickel | 0.20 | B | 0.10 | NC | 30 | U |
| Potassium | 61.6 | B | 45.13 | 31 | 40 | B |
| Selenium | 0.96 | | 0.73 | NC | 30 | U |
| Silicon | 193 | | 186.6 | 4 | 40 | |
| Silver | 0.15 | U | 0.14 | NC | 30 | U |
| Sodium | 55.7 | U | 50.1 | NC | 30 | U |
| Vanadium | 0.57 | B | 0.406 | 34 | 30 | B M |
| Zinc | 1.8 | | 1.90 | 4 | 40 | |

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Method Blank - Batch: 280-40983**

**Method: 7471A**
**Preparation: 7471A**

Lab Sample ID: MB 280-40983/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/18/2010 1413
Date Prepared: 11/18/2010 0900

Analysis Batch: 280-41892
Prep Batch: 280-40983
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 101118AA.txt
Initial Weight/Volume: 0.60 g
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.0055 | U | 0.0055 | 0.017 |

**Lab Control Sample - Batch: 280-40983**

**Method: 7471A**
**Preparation: 7471A**

Lab Sample ID: LCS 280-40983/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/18/2010 1416
Date Prepared: 11/18/2010 0900

Analysis Batch: 280-41892
Prep Batch: 280-40983
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 101118AA.txt
Initial Weight/Volume: 0.60 g
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.417 | 0.422 | 101 | 87 - 111 | |

**Matrix Spike - Batch: 280-40983**

**Method: 7471A**
**Preparation: 7471A**

Lab Sample ID: 280-9732-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/18/2010 1427
Date Prepared: 11/18/2010 0900

Analysis Batch: 280-41892
Prep Batch: 280-40983
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 101118AA.txt
Initial Weight/Volume: 0.62 g
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Mercury | 0.0054 | U | 0.404 | 0.396 | 98 | 87 - 111 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Duplicate - Batch: 280-40983**

**Method: 7471A**
**Preparation: 7471A**

Lab Sample ID: 280-9732-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 11/18/2010 1425
Date Prepared: 11/18/2010 0900

Analysis Batch: 280-41892
Prep Batch: 280-40983
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 101118AA.txt
Initial Weight/Volume: 0.61 g
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Mercury | 0.0054 | U | 0.0054 | NC | 20 | U |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-9732-1
Sdg Number: J00923

**Duplicate - Batch: 280-40942**

**Method: D-2216**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-9732-1 | Analysis Batch: | 280-40942 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | % | Initial Weight/Volume: | |
| Date Analyzed: | 11/15/2010 1016 | | | Final Weight/Volume: | |
| Date Prepared: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Percent Moisture | 0.13 | 0.12 | 3 | 20 | |

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-174-011 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: WT Sexsmith | Company Contact: Joan Kessner; Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8GC Freq 11/10/10; Data Turnaround: 15 Days |
| Project Designation: ARRA Remaining Sites Confirmation Sampling - Soil Full Pr | Sampling Location: 100-K-90 Surface Sample | SAF No.: RC-174 | |
| Ice Chest No.: NA | Field Logbook No.: EL-1649; COA: S10K90A000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

POSSIBLE SAMPLE HAZARDS/REMARKS

None JRD 11/10/10

Special Handling and/or Storage

Cool 4C JRD 11/10/10

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool 4C ~~None~~ JRD 11/10/10 | Cool 4C | Cool 4C | None | | | | | | | | |
| Type of Container | aG | aG | aG | P | | | | | | | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | | | | | | | | |
| Volume | 125mL | 125mL | 60mL | 500mL | | | | | | | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | VOA - 8260A (TCL) | See item (2) in Special Instructions. | | | | | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1B526 | SOIL | 11/10/10 | 1015 | ✓ | | | | | | | | | ETS |
| ~~J1B527~~ JRD 11/10/10 | SOIL | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | | Sign/Print Names | |
|---|---|---|---|
| Relinquished By/Removed From: Whitney Sexsmith [signature] | Date/Time: 1040 11/10/10 | Received By/Stored In: JRDeBrigue [signature] | Date/Time: 1040 11/10/10 |
| Relinquished By/Removed From: JRDeBrigue [signature] | Date/Time: 1100 11/10/10 | Received By/Stored In: J.R. Edmundson [signature] | Date/Time: 1100 11/10/10 |
| Relinquished By/Removed From: J.R. Edmundson [signature] | Date/Time: 1210 11/10/10 | Received By/Stored In: TAIR [signature] | Date/Time: 1210 11.10.10 |
| Relinquished By/Removed From: TAIR [signature] | Date/Time: 1400 11.10.10 | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta

REVIEWED BY JEB DATE 11-10-10

J00923

Matrix *: S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

| | | | |
|---|---|---|---|
| LABORATORY SECTION | Received By: [signature] | Title: | Date/Time: 11/12/10 0900 |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

WCH-EE-011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Project 28002142 -6010TR -5.1/2

Analytical Due:

Report Due: 11/29/10

# Sample Check-in List

Date/Time Received: 11/12/10 900 GM Screen Result 60 microR/hr

Client: Washington Closure Hanford SDG #: J00923 NA[ ] SAF #: RC-174 NA [ ]

Job Number: 9732 Chain of Custody # RC-174-011

Shipping Container ID: _____ Air Bill # 794108052324 796440900494 794108039533

1. Custody Seals on shipping container intact? NA [ ] Yes [✓] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [✓] No [ ]
3. Chain of Custody record present? NA [ ] Yes [✓] No [ ]
4. Cooler Temperature °C: 1.6, 1.8, 2.0 NA [ ] 5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 21
7. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
8. Samples have:
   - ✓ Tape
   - ✓ Custody Seals
   - ✓ Hazard Lables
   - ✓ Appropriate Sample Lables
9. Samples are:
   - ✓ In Good Condition
   - ✓ Broken
   - ____ Leaking
   - ____ Have Air Bubbles

   (Only for samples requiring no head space.)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount $HNO_3$ Added _____
11. Sample Location, Sample Collector Listed? *
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [signature] Date: 11/12/10

| Client Sample ID | Analysis Requested | Condition | Comments/Action |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Client Informed on _____ by _____ Person Contacted _____

[ ] No action necessary; process as is.

Project Manager [signature] Date 11/15/10

From: Origin ID: PSCA (509) 375-3131
Shipping Dept.
TESTAMERICA LABORATORIES
2800 GEORGE WASHINGTON WAY

RICHLAND, WA 99354

J10201010040226

Ship Date: 11NOV10
ActWgt: 24.0 LB
CAD: 1033413/INET3090

Delivery Address Bar Code

Ref # WCH/RC-119-041
Invoice #
PO #
Dept #

SHIP TO: (303) 736-0100 BILL SENDER
**SAMPLE RECEIVING DENVER_WCH**
**TESTAMERICA DENVER (WCH)**
**4955 YARROW ST**

**ARVADA, CO 80002**

TRK# 0201 7941 0805 2324

FRI - 12 NOV A1
PRIORITY OVERNIGHT

80002
CO-US
DEN

**XH WHHA**

**After printing this label:**
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additionel charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic valueof the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

From: Origin ID: PSCA (509) 375-3131
Shipping Dept.
TESTAMERICA LABORATORIES
2800 GEORGE WASHINGTON WAY

RICHLAND, WA 99354

FedEx. Express

Ship Date: 11NOV10
ActWgt: 25.0 LB
CAD: 1033413/INET3090

Delivery Address Bar Code

SHIP TO: (303) 736-0100 BILL SENDER
SAMPLE RECEIVING DENVER_WCH
TESTAMERICA DENVER (WCH)
4955 YARROW ST

ARVADA, CO 80002

Ref # WCH/RC-119-041
Invoice #
PO #
Dept #

TRK# 0201 7964 4090 0494

FRI - 12 NOV A1
PRIORITY OVERNIGHT

80002
CO-US
DEN

XH WHHA

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From: Origin ID: PSCA (509) 375-3131
Shipping Dept.
TESTAMERICA LABORATORIES
2800 GEORGE WASHINGTON WAY

RICHLAND, WA 99354

FedEx. Express

E

J10301010040226

Ship Date: 11NOV10
ActWgt: 43.0 LB
CAD: 1033413/INET3090

Delivery Address Bar Code

SHIP TO: (303) 736-0100 BILL SENDER
SAMPLE RECEIVING DENVER_WCH
TESTAMERICA DENVER (WCH)
4955 YARROW ST

ARVADA, CO 80002

Ref # WCH/RC-119-041
Invoice #
PO #
Dept #

TRK# 0201 7941 0803 9533

FRI - 12 NOV A1
PRIORITY OVERNIGHT

80002
CO-US
DEN

XH WHHA

50A01/0C0A/2780

**After printing this label:**
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