

SAF-RC-074
100-D/DR Burial Grounds & Remaining
Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 8/18/11
INITIAL/DATE

COMMENTS:

SDG JP0260

SAF RC-074

Rad only

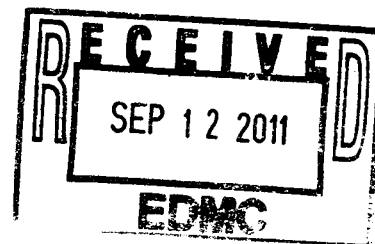
Chem only

Rad & Chem

Complete

Partial

Waste Site: 100-D-104 Excavation (ACL)



ANALYTICAL REPORT

Job Number: 280-19013-1

SDG Number: JP0260

Job Description: SAF# RC-074

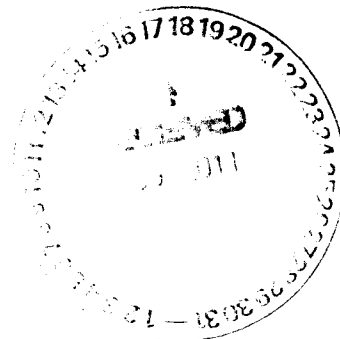
For:

Washington Closure Hanford

2620 Fermi Avenue

Richland, WA 99354

Attention: Joan H Kessner



A handwritten signature in black ink that reads 'Kae E. Yoder'.

Approved for release
Kae E Yoder
Project Manager II
8/17/2011 10:15 AM

Kae E Yoder
Project Manager II
kae.yoder@testamericainc.com
08/17/2011

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.

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002

Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com



Table of Contents

| | |
|------------------------------------|----|
| Cover Title Page | 1 |
| Report Narrative | 3 |
| Data Qualifiers | 5 |
| Method Summary | 6 |
| Method / Analyst Summary | 7 |
| Sample Summary | 8 |
| Sample Results | 9 |
| Sample Datasheets | 10 |
| QC Results | 16 |
| Qc Association Summary | 17 |
| Qc Reports | 19 |
| Client Chain of Custody | 30 |
| Sample Receipt Checklist | 31 |

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-19013-1

SDG #: JP0260

SAF#: RC-074

Date SDG Closed: August 10, 2011

Data Deliverable: 7 Day / Summary

| <u>CLIENT ID</u> | <u>LAB ID</u> | <u>ANALYSES REQUESTED</u> | <u>ANALYSES PERFORMED</u> |
|------------------|---------------|---------------------------|------------------------------|
| J1KN42 | 280-19013-1 | 6010/7471/1311-6010-7470 | 6010B/7471A/1311-6010B-7470A |
| J1KN43 | 280-19013-2 | 6010/7471/1311-6010-7470 | 6010B/7471A/1311-6010B-7470A |

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 samples were received on 8/10/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 2.5 C.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-80737 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to high constituent concentration, the Mercury analysis of sample J1KN43 had to be performed at a dilution. The reporting limit has been adjusted relative to the dilution required.

Low levels of Aluminum are present at a level greater than half the reporting limit in the method blank associated with batch 280-80737. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1KN42; therefore, control limits are not applicable.

Silicon was recovered outside the control limits in the Matrix Spike performed on sample J1KN42, and the associated sample result has 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.

No other anomalies were encountered.

TCLP METALS - SW846 1311/6010B/7470A

Low levels of Barium are present in the method blank associated with batch 280-81040. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

The duplicate analysis of sample J1KN43 exhibited RPD data outside the control limits for Chromium, and the associated sample result has 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: 280-19013-1

Sdg Number: JP0260

| <u>Lab Section</u> | <u>Qualifier</u> | <u>Description</u> |
|--------------------|------------------|---|
| Metals | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | 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. |
| | X | Serial dilution in the analytical batch indicates that physical and chemical interferences are present. |

METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-19013-1

Sdg Number: JP0260

| Description | Lab Location | Method | Preparation Method |
|---|--------------|-------------|---------------------------|
| Matrix: Solid | | | |
| Metals (ICP) Preparation, Metals | TAL DEN | SW846 6010B | SW846 3050B |
| TCLP Metals (ICP) TCLP Extraction Preparation, Total Metals | TAL DEN | SW846 6010B | SW846 1311 SW846 3010A |
| TCLP Mercury TCLP Extraction Preparation, Mercury | TAL DEN | SW846 7470A | SW846 1311 SW846 7470A |
| Mercury (CVAA) Preparation, Mercury | TAL DEN | SW846 7471A | 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: 280-19013-1
Sdg Number: JP0260

| Method | Analyst | Analyst ID |
|---------------|-------------------|-------------------|
| SW846 6010B | Bowen, Heidi E | HEB |
| SW846 6010B | Harre, John K | JKH |
| SW846 7470A | Niman, Katie M | KMN |
| SW846 7471A | Niman, Katie M | KMN |
| ASTM D-2216 | Berry III, Paul B | PBB |

SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|----------------------|-------------------------|----------------------|------------------------------|-------------------------------|
| 280-19013-1 | J1KN42 | Solid | 08/08/2011 1240 | 08/10/2011 1030 |
| 280-19013-2 | J1KN43 | Solid | 08/08/2011 1250 | 08/10/2011 1030 |

SAMPLE RESULTS

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-19013-1

Sdg Number: JP0260

Client Sample ID: J1KN42

Lab Sample ID: 280-19013-1

Date Sampled: 08/08/2011 1240

Client Matrix: Solid

% Moisture: 0.8

Date Received: 08/10/2011 1030

6010B Metals (ICP)

| | | | | | |
|------------------|-----------------|-----------------|-----------|------------------------|----------------|
| Analysis Method: | 6010B | Analysis Batch: | 280-81063 | Instrument ID: | MT_025 |
| Prep Method: | 3050B | Prep Batch: | 280-80737 | Lab File ID: | 25A3081111.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.05 g |
| Analysis Date: | 08/11/2011 1458 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 08/10/2011 1420 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|------------|--------------------|----------------|-----------|-------|------|
| Aluminum | | 6040 | X | 1.5 | 4.8 |
| Antimony | | 0.43 | B | 0.36 | 0.58 |
| Arsenic | | 2.7 | | 0.63 | 0.96 |
| Barium | | 61.4 | X | 0.073 | 0.48 |
| Beryllium | | 0.20 | | 0.032 | 0.19 |
| Boron | | 0.94 | U | 0.94 | 1.9 |
| Cadmium | | 0.065 | B | 0.039 | 0.19 |
| Calcium | | 8330 | X | 13.5 | 48.0 |
| Chromium | | 10.4 | X | 0.056 | 0.19 |
| Cobalt | | 8.9 | X | 0.096 | 0.96 |
| Copper | | 15.4 | X | 0.21 | 0.96 |
| Iron | | 23900 | X | 3.6 | 4.8 |
| Lead | | 5.6 | | 0.26 | 0.48 |
| Magnesium | | 4710 | X | 3.6 | 19.2 |
| Manganese | | 306 | X | 0.096 | 0.96 |
| Molybdenum | | 0.32 | B | 0.25 | 1.9 |
| Nickel | | 13.1 | X | 0.12 | 3.8 |
| Potassium | | 999 | | 39.4 | 288 |
| Selenium | | 0.83 | U | 0.83 | 0.96 |
| Silicon | | 433 | X N | 5.4 | 9.6 |
| Silver | | 0.15 | U | 0.15 | 0.19 |
| Sodium | | 473 | | 56.7 | 115 |
| Vanadium | | 62.5 | X | 0.090 | 1.9 |
| Zinc | | 45.4 | X | 0.38 | 0.96 |

6010B TCLP Metals (ICP)-TCLP

| | | | | | |
|------------------|-----------------|-----------------|-----------|------------------------|---------------|
| Analysis Method: | 6010B | Analysis Batch: | 280-81515 | Instrument ID: | MT_026 |
| Prep Method: | 3010A | Prep Batch: | 280-81040 | Lab File ID: | 26b081511.asc |
| Dilution: | 1.0 | Leach Batch: | 280-80797 | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 08/15/2011 1945 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 08/12/2011 1300 | | | | |
| Leach Date: | 08/10/2011 2127 | | | | |

| Analyte | DryWt Corrected: N | Result (mg/L) | Qualifier | MDL | RL |
|----------|--------------------|---------------|-----------|--------|------|
| Arsenic | | 0.022 | U | 0.022 | 0.50 |
| Barium | | 0.22 | B | 0.0020 | 1.0 |
| Cadmium | | 0.0020 | U | 0.0020 | 0.10 |
| Chromium | | 0.0079 | B | 0.0030 | 0.50 |
| Lead | | 0.013 | U | 0.013 | 0.50 |
| Selenium | | 0.024 | U | 0.024 | 0.10 |
| Silver | | 0.0040 | U | 0.0040 | 0.50 |

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Client Sample ID: J1KN42

Lab Sample ID: 280-19013-1
Client Matrix: Solid

Date Sampled: 08/08/2011 1240
Date Received: 08/10/2011 1030

7470A TCLP Mercury-TCLP

Analysis Method: 7470A Analysis Batch: 280-81592 Instrument ID: MT_033
Prep Method: 7470A Prep Batch: 280-81335 Lab File ID: 110815AA.txt
Dilution: 1.0 Leach Batch: 280-80797 Initial Weight/Volume: 30 mL
Analysis Date: 08/15/2011 1741 Final Weight/Volume: 30 mL
Prep Date: 08/15/2011 1400
Leach Date: 08/10/2011 2127

| Analyte | DryWt Corrected: N | Result (mg/L) | Qualifier | MDL | RL |
|---------|--------------------|---------------|-----------|----------|--------|
| Mercury | | 0.000032 | B | 0.000030 | 0.0020 |

7471A Mercury (CVAA)

Analysis Method: 7471A Analysis Batch: 280-81595 Instrument ID: MT_034
Prep Method: 7471A Prep Batch: 280-80970 Lab File ID: 110815TA.txt
Dilution: 1.0 Initial Weight/Volume: 0.66 g
Analysis Date: 08/15/2011 1834 Final Weight/Volume: 50 mL
Prep Date: 08/15/2011 1620

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---------|--------------------|----------------|-----------|--------|-------|
| Mercury | | 0.16 | | 0.0051 | 0.016 |

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-19013-1

Sdg Number: JP0260

Client Sample ID: J1KN43

Lab Sample ID: 280-19013-2

Date Sampled: 08/08/2011 1250

Client Matrix: Solid

% Moisture: 0.9

Date Received: 08/10/2011 1030

6010B Metals (ICP)

| | | | | | |
|------------------|-----------------|-----------------|-----------|------------------------|----------------|
| Analysis Method: | 6010B | Analysis Batch: | 280-81063 | Instrument ID: | MT_025 |
| Prep Method: | 3050B | Prep Batch: | 280-80737 | Lab File ID: | 25A3081111.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.11 g |
| Analysis Date: | 08/11/2011 1507 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 08/10/2011 1420 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|------------|--------------------|----------------|-----------|-------|------|
| Aluminum | | 5680 | X | 1.4 | 4.5 |
| Antimony | | 0.35 | U | 0.35 | 0.55 |
| Arsenic | | 2.8 | | 0.60 | 0.91 |
| Barium | | 60.2 | X | 0.069 | 0.45 |
| Beryllium | | 0.18 | | 0.030 | 0.18 |
| Boron | | 0.89 | U | 0.89 | 1.8 |
| Cadmium | | 0.055 | B | 0.037 | 0.18 |
| Calcium | | 8280 | X | 12.8 | 45.4 |
| Chromium | | 13.2 | X | 0.053 | 0.18 |
| Cobalt | | 7.6 | X | 0.091 | 0.91 |
| Copper | | 14.7 | X | 0.20 | 0.91 |
| Iron | | 20800 | X | 3.5 | 4.5 |
| Lead | | 6.1 | | 0.25 | 0.45 |
| Magnesium | | 3930 | X | 3.4 | 18.2 |
| Manganese | | 278 | X | 0.091 | 0.91 |
| Molybdenum | | 0.38 | B | 0.24 | 1.8 |
| Nickel | | 8.7 | X | 0.11 | 3.6 |
| Potassium | | 979 | | 37.3 | 273 |
| Selenium | | 0.78 | U | 0.78 | 0.91 |
| Silicon | | 396 | X | 5.1 | 9.1 |
| Silver | | 0.15 | U | 0.15 | 0.18 |
| Sodium | | 342 | | 53.6 | 109 |
| Vanadium | | 52.9 | X | 0.085 | 1.8 |
| Zinc | | 51.0 | X | 0.36 | 0.91 |

6010B TCLP Metals (ICP)-TCLP

| | | | | | |
|------------------|-----------------|-----------------|-----------|------------------------|----------------|
| Analysis Method: | 6010B | Analysis Batch: | 280-81515 | Instrument ID: | MT_026 |
| Prep Method: | 3010A | Prep Batch: | 280-81040 | Lab File ID: | 26b0815111.asc |
| Dilution: | 1.0 | Leach Batch: | 280-80797 | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 08/15/2011 1948 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 08/12/2011 1300 | | | | |
| Leach Date: | 08/10/2011 2127 | | | | |

| Analyte | DryWt Corrected: N | Result (mg/L) | Qualifier | MDL | RL |
|----------|--------------------|---------------|-----------|--------|------|
| Arsenic | | 0.022 | U | 0.022 | 0.50 |
| Barium | | 0.27 | B | 0.0020 | 1.0 |
| Cadmium | | 0.0020 | U | 0.0020 | 0.10 |
| Chromium | | 0.011 | B M | 0.0030 | 0.50 |
| Lead | | 0.013 | U | 0.013 | 0.50 |
| Selenium | | 0.024 | U | 0.024 | 0.10 |
| Silver | | 0.0040 | U | 0.0040 | 0.50 |

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Client Sample ID: J1KN43

Lab Sample ID: 280-19013-2
Client Matrix: Solid

Date Sampled: 08/08/2011 1250
Date Received: 08/10/2011 1030

7470A TCLP Mercury-TCLP

| | | | | | |
|------------------|-----------------|-----------------|-----------|------------------------|--------------|
| Analysis Method: | 7470A | Analysis Batch: | 280-81592 | Instrument ID: | MT_033 |
| Prep Method: | 7470A | Prep Batch: | 280-81335 | Lab File ID: | 110815AA.txt |
| Dilution: | 1.0 | Leach Batch: | 280-80797 | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 08/15/2011 1743 | | | Final Weight/Volume: | 30 mL |
| Prep Date: | 08/15/2011 1400 | | | | |
| Leach Date: | 08/10/2011 2127 | | | | |

| Analyte | DryWt Corrected: | Result (mg/L) | Qualifier | MDL | RL |
|---------|------------------|---------------|-----------|----------|--------|
| Mercury | N | 0.00018 | B | 0.000030 | 0.0020 |

7471A Mercury (CVAA)

| | | | | | |
|------------------|-----------------|-----------------|-----------|------------------------|--------------|
| Analysis Method: | 7471A | Analysis Batch: | 280-81595 | Instrument ID: | MT_034 |
| Prep Method: | 7471A | Prep Batch: | 280-80970 | Lab File ID: | 110815TA.txt |
| Dilution: | 10 | | | Initial Weight/Volume: | 0.63 g |
| Analysis Date: | 08/16/2011 0111 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 08/15/2011 1620 | | | | |

| Analyte | DryWt Corrected: | Result (mg/Kg) | Qualifier | MDL | RL |
|---------|------------------|----------------|-----------|-------|------|
| Mercury | Y | 1.9 | | 0.053 | 0.16 |

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-19013-1

Sdg Number: JP0260

General Chemistry

Client Sample ID: J1KN42

Lab Sample ID: 280-19013-1

Date Sampled: 08/08/2011 1240

Client Matrix: Solid

Date Received: 08/10/2011 1030

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|------------------|---------------------------|------|--------------------------------|------|------|-----|--------------------|
| Percent Moisture | 0.85 | | % | 0.10 | 0.10 | 1.0 | D-2216 |
| | Analysis Batch: 280-80919 | | Analysis Date: 08/11/2011 1202 | | | | DryWt Corrected: N |

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-19013-1

Sdg Number: JP0260

General Chemistry

Client Sample ID: J1KN43

Lab Sample ID: 280-19013-2

Client Matrix: Solid

Date Sampled: 08/08/2011 1250

Date Received: 08/10/2011 1030

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|------------------|---------------------------|------|--------------------------------|------|------|-----|--------------------|
| Percent Moisture | 0.89 | | % | 0.10 | 0.10 | 1.0 | D-2216 |
| | Analysis Batch: 280-80919 | | Analysis Date: 08/11/2011 1202 | | | | DryWt Corrected: N |

QUALITY CONTROL RESULTS

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1

Sdg Number: JP0260

QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|----------------------------------|---------------------------|--------------|---------------|--------|------------|
| Metals | | | | | |
| Prep Batch: 280-80737 | | | | | |
| LCS 280-80737/2-A | Lab Control Sample | T | Solid | 3050B | |
| MB 280-80737/1-A | Method Blank | T | Solid | 3050B | |
| 280-19013-1 | J1KN42 | T | Solid | 3050B | |
| 280-19013-1DU | Duplicate | T | Solid | 3050B | |
| 280-19013-1MS | Matrix Spike | T | Solid | 3050B | |
| 280-19013-2 | J1KN43 | T | Solid | 3050B | |
| Prep Batch: 280-80797 | | | | | |
| LCS 280-80797/2-B | Lab Control Sample | P | Solid | 1311 | |
| LCS 280-80797/2-C | Lab Control Sample | P | Solid | 1311 | |
| LB 280-80797/1-B | TCLP SPLPE Leachate Blank | P | Solid | 1311 | |
| LB 280-80797/1-C | TCLP SPLPE Leachate Blank | P | Solid | 1311 | |
| 280-19013-1 | J1KN42 | P | Solid | 1311 | |
| 280-19013-2 | J1KN43 | P | Solid | 1311 | |
| 280-19013-2DU | Duplicate | P | Solid | 1311 | |
| 280-19013-2MS | Matrix Spike | P | Solid | 1311 | |
| Prep Batch: 280-80970 | | | | | |
| LCS 280-80970/2-A | Lab Control Sample | T | Solid | 7471A | |
| MB 280-80970/1-A | Method Blank | T | Solid | 7471A | |
| 280-19013-1 | J1KN42 | T | Solid | 7471A | |
| 280-19013-1DU | Duplicate | T | Solid | 7471A | |
| 280-19013-1MS | Matrix Spike | T | Solid | 7471A | |
| 280-19013-2 | J1KN43 | T | Solid | 7471A | |
| Prep Batch: 280-81040 | | | | | |
| LCS 280-80797/2-B | Lab Control Sample | P | Solid | 3010A | 280-80797 |
| LB 280-80797/1-B | TCLP SPLPE Leachate Blank | P | Solid | 3010A | 280-80797 |
| 280-19013-1 | J1KN42 | P | Solid | 3010A | 280-80797 |
| 280-19013-2 | J1KN43 | P | Solid | 3010A | 280-80797 |
| 280-19013-2DU | Duplicate | P | Solid | 3010A | 280-80797 |
| 280-19013-2MS | Matrix Spike | P | Solid | 3010A | 280-80797 |
| Analysis Batch: 280-81063 | | | | | |
| LCS 280-80737/2-A | Lab Control Sample | T | Solid | 6010B | 280-80737 |
| MB 280-80737/1-A | Method Blank | T | Solid | 6010B | 280-80737 |
| 280-19013-1 | J1KN42 | T | Solid | 6010B | 280-80737 |
| 280-19013-1DU | Duplicate | T | Solid | 6010B | 280-80737 |
| 280-19013-1MS | Matrix Spike | T | Solid | 6010B | 280-80737 |
| 280-19013-2 | J1KN43 | T | Solid | 6010B | 280-80737 |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---------------------------------|---------------------------|--------------|---------------|--------|------------|
| Metals | | | | | |
| Prep Batch: 280-81335 | | | | | |
| LCS 280-80797/2-C | Lab Control Sample | P | Solid | 7470A | 280-80797 |
| LB 280-80797/1-C | TCLP SPLPE Leachate Blank | P | Solid | 7470A | 280-80797 |
| 280-19013-1 | J1KN42 | P | Solid | 7470A | 280-80797 |
| 280-19013-2 | J1KN43 | P | Solid | 7470A | 280-80797 |
| 280-19013-2DU | Duplicate | P | Solid | 7470A | 280-80797 |
| 280-19013-2MS | Matrix Spike | P | Solid | 7470A | 280-80797 |
| Analysis Batch:280-81515 | | | | | |
| LCS 280-80797/2-B | Lab Control Sample | P | Solid | 6010B | 280-81040 |
| LB 280-80797/1-B | TCLP SPLPE Leachate Blank | P | Solid | 6010B | 280-81040 |
| 280-19013-1 | J1KN42 | P | Solid | 6010B | 280-81040 |
| 280-19013-2 | J1KN43 | P | Solid | 6010B | 280-81040 |
| 280-19013-2DU | Duplicate | P | Solid | 6010B | 280-81040 |
| 280-19013-2MS | Matrix Spike | P | Solid | 6010B | 280-81040 |
| Analysis Batch:280-81592 | | | | | |
| LCS 280-80797/2-C | Lab Control Sample | P | Solid | 7470A | 280-81335 |
| LB 280-80797/1-C | TCLP SPLPE Leachate Blank | P | Solid | 7470A | 280-81335 |
| 280-19013-1 | J1KN42 | P | Solid | 7470A | 280-81335 |
| 280-19013-2 | J1KN43 | P | Solid | 7470A | 280-81335 |
| 280-19013-2DU | Duplicate | P | Solid | 7470A | 280-81335 |
| 280-19013-2MS | Matrix Spike | P | Solid | 7470A | 280-81335 |
| Analysis Batch:280-81595 | | | | | |
| LCS 280-80970/2-A | Lab Control Sample | T | Solid | 7471A | 280-80970 |
| MB 280-80970/1-A | Method Blank | T | Solid | 7471A | 280-80970 |
| 280-19013-1 | J1KN42 | T | Solid | 7471A | 280-80970 |
| 280-19013-1DU | Duplicate | T | Solid | 7471A | 280-80970 |
| 280-19013-1MS | Matrix Spike | T | Solid | 7471A | 280-80970 |
| 280-19013-2 | J1KN43 | T | Solid | 7471A | 280-80970 |
| Report Basis | | | | | |
| P = TCLP | | | | | |
| T = Total | | | | | |
| General Chemistry | | | | | |
| Analysis Batch:280-80919 | | | | | |
| 280-19013-1 | J1KN42 | T | Solid | D-2216 | |
| 280-19013-1DU | Duplicate | T | Solid | D-2216 | |
| 280-19013-2 | J1KN43 | T | Solid | D-2216 | |
| Report Basis | | | | | |
| T = Total | | | | | |

TestAmerica Denver

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Method Blank - Batch: 280-80737

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

Lab Sample ID: MB 280-80737/1-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/11/2011 1453
Prep Date: 08/10/2011 1420
Leach Date: N/A

Analysis Batch: 280-81063
Prep Batch: 280-80737
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_025
Lab File ID: 25A3081111.asc
Initial Weight/Volume: 1 g
Final Weight/Volume: 100 mL

| Analyte | Result | Qual | MDL | RL |
|------------|--------|------|-------|------|
| Aluminum | 3.48 | B | 1.6 | 5.0 |
| Antimony | 0.38 | U | 0.38 | 0.60 |
| Arsenic | 0.66 | U | 0.66 | 1.0 |
| Barium | 0.076 | U | 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 | 14.1 | U | 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 | 3.7 | U | 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 | 5.7 | U | 5.7 | 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: 280-19013-1
Sdg Number: JP0260

Lab Control Sample - Batch: 280-80737

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

Lab Sample ID: LCS 280-80737/2-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/11/2011 1456
Prep Date: 08/10/2011 1420
Leach Date: N/A

Analysis Batch: 280-81063
Prep Batch: 280-80737
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_025
Lab File ID: 25A3081111.asc
Initial Weight/Volume: 1 g
Final Weight/Volume: 100 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|------------|--------------|--------|--------|----------|------|
| Aluminum | 200 | 194.8 | 97 | 82 - 116 | |
| Antimony | 50.0 | 47.17 | 94 | 82 - 110 | |
| Arsenic | 100 | 100.4 | 100 | 85 - 110 | |
| Barium | 200 | 204.8 | 102 | 87 - 112 | |
| Beryllium | 5.00 | 4.78 | 96 | 84 - 114 | |
| Boron | 100 | 94.86 | 95 | 81 - 110 | |
| Cadmium | 10.0 | 10.06 | 101 | 87 - 110 | |
| Calcium | 5000 | 4825 | 96 | 82 - 114 | |
| Chromium | 20.0 | 20.20 | 101 | 84 - 114 | |
| Cobalt | 50.0 | 49.28 | 99 | 87 - 110 | |
| Copper | 25.0 | 25.37 | 101 | 88 - 110 | |
| Iron | 100 | 100.7 | 101 | 87 - 120 | |
| Lead | 50.0 | 49.24 | 98 | 86 - 110 | |
| Magnesium | 5000 | 4764 | 95 | 90 - 110 | |
| Manganese | 50.0 | 49.00 | 98 | 88 - 110 | |
| Molybdenum | 100 | 99.38 | 99 | 86 - 110 | |
| Nickel | 50.0 | 49.32 | 99 | 87 - 110 | |
| Potassium | 5000 | 5116 | 102 | 89 - 110 | |
| Selenium | 200 | 199.5 | 100 | 83 - 110 | |
| Silicon | 1000 | 193.1 | 19 | 10 - 70 | |
| Silver | 5.00 | 5.13 | 103 | 87 - 114 | |
| Sodium | 5000 | 5286 | 106 | 90 - 112 | |
| Vanadium | 50.0 | 49.80 | 100 | 88 - 110 | |
| Zinc | 50.0 | 46.76 | 94 | 76 - 114 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Matrix Spike - Batch: 280-80737

Method: 6010B
Preparation: 3050B

Lab Sample ID: 280-19013-1
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/11/2011 1505
Prep Date: 08/10/2011 1420
Leach Date: N/A

Analysis Batch: 280-81063
Prep Batch: 280-80737
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_025
Lab File ID: 25A3081111.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|------------|--------------------|--------------|--------|--------|----------|------|
| Aluminum | 6040 | 202 | 8035 | 989 | 50 - 200 | 4 |
| Antimony | 0.43 B | 50.4 | 27.29 | 53 | 20 - 200 | |
| Arsenic | 2.7 | 101 | 89.90 | 86 | 76 - 111 | |
| Barium | 61.4 | 202 | 249.4 | 93 | 52 - 159 | |
| Beryllium | 0.20 | 5.04 | 4.40 | 83 | 72 - 105 | |
| Boron | 0.94 U | 101 | 81.89 | 81 | 75 - 107 | |
| Cadmium | 0.065 B | 10.1 | 9.03 | 89 | 40 - 130 | |
| Calcium | 8330 | 5040 | 14060 | 114 | 43 - 165 | |
| Chromium | 10.4 | 20.2 | 29.02 | 92 | 70 - 200 | |
| Cobalt | 8.9 | 50.4 | 51.69 | 85 | 72 - 106 | |
| Copper | 15.4 | 25.2 | 38.20 | 90 | 37 - 187 | |
| Iron | 23900 | 101 | 25330 | 1462 | 70 - 200 | 4 |
| Lead | 5.6 | 50.4 | 48.13 | 84 | 70 - 200 | |
| Magnesium | 4710 | 5040 | 9245 | 90 | 64 - 145 | |
| Manganese | 306 | 50.4 | 392.2 | 171 | 40 - 200 | 4 |
| Molybdenum | 0.32 B | 101 | 86.72 | 86 | 75 - 103 | |
| Nickel | 13.1 | 50.4 | 51.64 | 76 | 61 - 126 | |
| Potassium | 999 | 5040 | 5793 | 95 | 56 - 172 | |
| Selenium | 0.83 U | 202 | 171.4 | 85 | 76 - 104 | |
| Silicon | 433 | 1010 | 613.5 | 18 | 20 - 200 | N |
| Silver | 0.15 U | 5.04 | 4.40 | 87 | 75 - 141 | |
| Sodium | 473 | 5040 | 5571 | 101 | 78 - 111 | |
| Vanadium | 62.5 | 50.4 | 116.5 | 107 | 50 - 169 | |
| Zinc | 45.4 | 50.4 | 85.89 | 80 | 70 - 200 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Duplicate - Batch: 280-80737

Method: 6010B
Preparation: 3050B

| | | |
|--------------------------------|---------------------------|-------------------------------|
| Lab Sample ID: 280-19013-1 | Analysis Batch: 280-81063 | Instrument ID: MT_025 |
| Client Matrix: Solid | Prep Batch: 280-80737 | Lab File ID: 25A3081111.asc |
| Dilution: 1.0 | Leach Batch: N/A | Initial Weight/Volume: 1.10 g |
| Analysis Date: 08/11/2011 1502 | Units: mg/Kg | Final Weight/Volume: 100 mL |
| Prep Date: 08/10/2011 1420 | | |
| Leach Date: N/A | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------|--------------------|--------|-----|-------|------|
| Aluminum | 6040 | 6277 | 4 | 40 | |
| Antimony | 0.43 B | 0.35 | NC | 40 | U |
| Arsenic | 2.7 | 2.56 | 7 | 30 | |
| Barium | 61.4 | 60.81 | 0.9 | 30 | |
| Beryllium | 0.20 | 0.198 | 1 | 30 | |
| Boron | 0.94 U | 0.90 | NC | 30 | U |
| Cadmium | 0.065 B | 0.0532 | 20 | 30 | B |
| Calcium | 8330 | 8677 | 4 | 30 | |
| Chromium | 10.4 | 9.78 | 6 | 40 | |
| Cobalt | 8.9 | 8.80 | 2 | 30 | |
| Copper | 15.4 | 16.62 | 7 | 30 | |
| Iron | 23900 | 23930 | 0.3 | 40 | |
| Lead | 5.6 | 5.75 | 3 | 40 | |
| Magnesium | 4710 | 4336 | 8 | 30 | |
| Manganese | 306 | 311.7 | 2 | 40 | |
| Molybdenum | 0.32 B | 0.262 | 21 | 30 | B |
| Nickel | 13.1 | 10.01 | 27 | 30 | |
| Potassium | 999 | 1037 | 4 | 40 | |
| Selenium | 0.83 U | 0.79 | NC | 30 | U |
| Silicon | 433 | 518.4 | 18 | 40 | |
| Silver | 0.15 U | 0.15 | NC | 30 | U |
| Sodium | 473 | 520.9 | 10 | 30 | |
| Vanadium | 62.5 | 61.21 | 2 | 30 | |
| Zinc | 45.4 | 47.44 | 4 | 40 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

TCLP SPLPE Leachate Blank - Batch: 280-81040

Method: 6010B
Preparation: 3010A
TCLP

| | | | | | |
|----------------|------------------|-----------------|-----------|------------------------|---------------|
| Lab Sample ID: | LB 280-80797/1-B | Analysis Batch: | 280-81515 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-81040 | Lab File ID: | 26b081511.asc |
| Dilution: | 1.0 | Leach Batch: | 280-80797 | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 08/15/2011 1940 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 08/12/2011 1300 | | | | |
| Leach Date: | 08/10/2011 2127 | | | | |

| Analyte | Result | Qual | MDL | RL |
|----------|--------|------|--------|------|
| Arsenic | 0.022 | U | 0.022 | 0.50 |
| Barium | 0.0109 | B | 0.0020 | 1.0 |
| Cadmium | 0.0020 | U | 0.0020 | 0.10 |
| Chromium | 0.0030 | U | 0.0030 | 0.50 |
| Lead | 0.013 | U | 0.013 | 0.50 |
| Selenium | 0.024 | U | 0.024 | 0.10 |
| Silver | 0.0040 | U | 0.0040 | 0.50 |

Lab Control Sample - Batch: 280-81040

Method: 6010B
Preparation: 3010A
TCLP

| | | | | | |
|----------------|-------------------|-----------------|-----------|------------------------|---------------|
| Lab Sample ID: | LCS 280-80797/2-B | Analysis Batch: | 280-81515 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-81040 | Lab File ID: | 26b081511.asc |
| Dilution: | 1.0 | Leach Batch: | 280-80797 | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 08/15/2011 1943 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 08/12/2011 1300 | | | | |
| Leach Date: | 08/10/2011 2127 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|----------|--------------|--------|--------|----------|------|
| Arsenic | 4.00 | 4.25 | 106 | 80 - 120 | |
| Barium | 12.0 | 12.71 | 106 | 80 - 120 | |
| Cadmium | 1.10 | 1.20 | 109 | 80 - 120 | |
| Chromium | 5.20 | 5.16 | 99 | 80 - 120 | |
| Lead | 5.50 | 5.70 | 104 | 80 - 120 | |
| Selenium | 3.00 | 3.14 | 105 | 80 - 120 | |
| Silver | 1.05 | 1.10 | 104 | 80 - 120 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Matrix Spike - Batch: 280-81040

Method: 6010B
Preparation: 3010A
TCLP

Lab Sample ID: 280-19013-2
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1953
Prep Date: 08/12/2011 1300
Leach Date: 08/10/2011 2127

Analysis Batch: 280-81515
Prep Batch: 280-81040
Leach Batch: 280-80797
Units: mg/L

Instrument ID: MT_026
Lab File ID: 26b081511.asc
Initial Weight/Volume: 10 mL
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|----------|--------------------|--------------|--------|--------|----------|------|
| Arsenic | 0.022 U | 4.00 | 4.35 | 109 | 80 - 120 | |
| Barium | 0.27 B | 12.0 | 13.18 | 108 | 80 - 120 | |
| Cadmium | 0.0020 U | 1.10 | 1.22 | 111 | 80 - 120 | |
| Chromium | 0.011 B | 5.20 | 5.27 | 101 | 80 - 120 | |
| Lead | 0.013 U | 5.50 | 5.79 | 105 | 80 - 120 | |
| Selenium | 0.024 U | 3.00 | 3.19 | 106 | 80 - 120 | |
| Silver | 0.0040 U | 1.05 | 1.13 | 108 | 80 - 120 | |

Duplicate - Batch: 280-81040

Method: 6010B
Preparation: 3010A
TCLP

Lab Sample ID: 280-19013-2
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1955
Prep Date: 08/12/2011 1300
Leach Date: 08/10/2011 2127

Analysis Batch: 280-81515
Prep Batch: 280-81040
Leach Batch: 280-80797
Units: mg/L

Instrument ID: MT_026
Lab File ID: 26b081511.asc
Initial Weight/Volume: 10 mL
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|----------|--------------------|--------|-----|-------|------|
| Arsenic | 0.022 U | 0.0234 | NC | 20 | B |
| Barium | 0.27 B | 0.268 | 0.7 | 20 | B |
| Cadmium | 0.0020 U | 0.0020 | NC | 20 | U |
| Chromium | 0.011 B | 0.0155 | 35 | 20 | B M |
| Lead | 0.013 U | 0.0169 | NC | 20 | B |
| Selenium | 0.024 U | 0.024 | NC | 20 | U |
| Silver | 0.0040 U | 0.0040 | NC | 20 | U |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

TCLP SPLPE Leachate Blank - Batch: 280-81335

Method: 7470A
Preparation: 7470A
TCLP

| | | | |
|---------------------------------|---------------------------|------------------------------|--|
| Lab Sample ID: LB 280-80797/1-C | Analysis Batch: 280-81592 | Instrument ID: MT_033 | |
| Client Matrix: Solid | Prep Batch: 280-81335 | Lab File ID: 110815AA.txt | |
| Dilution: 1.0 | Leach Batch: 280-80797 | Initial Weight/Volume: 30 mL | |
| Analysis Date: 08/15/2011 1736 | Units: mg/L | Final Weight/Volume: 30 mL | |
| Prep Date: 08/15/2011 1400 | | | |
| Leach Date: 08/10/2011 2127 | | | |

| Analyte | Result | Qual | MDL | RL |
|---------|----------|------|----------|--------|
| Mercury | 0.000030 | U | 0.000030 | 0.0020 |

Lab Control Sample - Batch: 280-81335

Method: 7470A
Preparation: 7470A
TCLP

| | | | |
|----------------------------------|---------------------------|------------------------------|--|
| Lab Sample ID: LCS 280-80797/2-C | Analysis Batch: 280-81592 | Instrument ID: MT_033 | |
| Client Matrix: Solid | Prep Batch: 280-81335 | Lab File ID: 110815AA.txt | |
| Dilution: 1.0 | Leach Batch: 280-80797 | Initial Weight/Volume: 30 mL | |
| Analysis Date: 08/15/2011 1739 | Units: mg/L | Final Weight/Volume: 30 mL | |
| Prep Date: 08/15/2011 1400 | | | |
| Leach Date: 08/10/2011 2127 | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---------|--------------|---------|--------|----------|------|
| Mercury | 0.00500 | 0.00507 | 101 | 90 - 116 | |

Matrix Spike - Batch: 280-81335

Method: 7470A
Preparation: 7470A
TCLP

| | | | |
|--------------------------------|---------------------------|------------------------------|--|
| Lab Sample ID: 280-19013-2 | Analysis Batch: 280-81592 | Instrument ID: MT_033 | |
| Client Matrix: Solid | Prep Batch: 280-81335 | Lab File ID: 110815AA.txt | |
| Dilution: 1.0 | Leach Batch: 280-80797 | Initial Weight/Volume: 30 mL | |
| Analysis Date: 08/15/2011 1748 | Units: mg/L | Final Weight/Volume: 30 mL | |
| Prep Date: 08/15/2011 1400 | | | |
| Leach Date: 08/10/2011 2127 | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---------|--------------------|--------------|---------|--------|----------|------|
| Mercury | 0.00018 B | 0.00500 | 0.00527 | 102 | 90 - 116 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Duplicate - Batch: 280-81335

Method: 7470A
Preparation: 7470A
TCLP

Lab Sample ID: 280-19013-2
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1746
Prep Date: 08/15/2011 1400
Leach Date: 08/10/2011 2127

Analysis Batch: 280-81592
Prep Batch: 280-81335
Leach Batch: 280-80797
Units: mg/L

Instrument ID: MT_033
Lab File ID: 110815AA.txt
Initial Weight/Volume: 30 mL
Final Weight/Volume: 30 mL

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---------|--------------------|----------|-----|-------|------|
| Mercury | 0.00018 B | 0.000178 | 0 | 20 | B |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Method Blank - Batch: 280-80970

Method: 7471A
Preparation: 7471A

Lab Sample ID: MB 280-80970/1-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1829
Prep Date: 08/15/2011 1620
Leach Date: N/A

Analysis Batch: 280-81595
Prep Batch: 280-80970
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_034
Lab File ID: 110815TA.txt
Initial Weight/Volume: 0.6 g
Final Weight/Volume: 50 mL

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

Lab Control Sample - Batch: 280-80970

Method: 7471A
Preparation: 7471A

Lab Sample ID: LCS 280-80970/2-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1831
Prep Date: 08/15/2011 1620
Leach Date: N/A

Analysis Batch: 280-81595
Prep Batch: 280-80970
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_034
Lab File ID: 110815TA.txt
Initial Weight/Volume: 0.6 g
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---------|--------------|--------|--------|----------|------|
| Mercury | 0.417 | 0.398 | 95 | 87 - 111 | |

Matrix Spike - Batch: 280-80970

Method: 7471A
Preparation: 7471A

Lab Sample ID: 280-19013-1
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1838
Prep Date: 08/15/2011 1620
Leach Date: N/A

Analysis Batch: 280-81595
Prep Batch: 280-80970
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_034
Lab File ID: 110815TA.txt
Initial Weight/Volume: 0.68 g
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---------|--------------------|--------------|--------|--------|----------|------|
| Mercury | 0.16 | 0.371 | 0.519 | 97 | 87 - 111 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Duplicate - Batch: 280-80970

Method: 7471A
Preparation: 7471A

Lab Sample ID: 280-19013-1
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/15/2011 1836
Prep Date: 08/15/2011 1620
Leach Date: N/A

Analysis Batch: 280-81595
Prep Batch: 280-80970
Leach Batch: N/A
Units: mg/Kg

Instrument ID: MT_034
Lab File ID: 110815TA.txt
Initial Weight/Volume: 0.64 g
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---------|--------------------|--------|-----|-------|------|
| Mercury | 0.16 | 0.169 | 6 | 20 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-19013-1
Sdg Number: JP0260

Duplicate - Batch: 280-80919

Method: D-2216
Preparation: N/A

Lab Sample ID: 280-19013-1
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 08/11/2011 1202
Prep Date: N/A
Leach Date: N/A

Analysis Batch: 280-80919
Prep Batch: N/A
Leach Batch: N/A
Units: %

Instrument ID: No Equipment
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|------------------|--------------------|--------|-----|-------|------|
| Percent Moisture | 0.85 | 0.89 | 4 | 20 | |

2.5 3-6-11 1/10/11

| | | | | | | | | | |
|---|--------------------|--|--------------------|------------------------------|--------------------|-----------------------|-----------------|------------------------------|-----------------|
| CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | Page 1 of 1 | | | | | | | |
| Washington Closure Hanford Collector: <u>K. Lucas</u> Project Designation: <u>100-D/DR Burial Grounds & Remaining Sites - Soil In-Proce</u> Ice Chest No.: <u>WCH-08-070</u> | | Telephone No.: <u>509-375-4688</u> Project Coordinator: <u>KESSNER, JH</u> SAF No.: <u>RC-074</u> Method of Shipment: <u>Fed Ex</u> | | | | | | | |
| Company Contact: <u>Joan Kessner</u> Sampling Location: <u>100-D-104 Excavation (ACL)</u> Field Logbook No.: <u>EL-1607-11</u> Offsite Property No.: <u>A100832</u> | | Price Code: <u>81</u> Data Turnaround: <u>21 Days</u> Bill of Lading/Air Bill No.: <u>See OSPC</u> | | | | | | | |
| COA: <u>00D1042600</u> Shipped To: <u>TestAmerica Incorporated, Richland, WA</u> POSSIBLE SAMPLE HAZARDS/REMARKS: <u>DELETED</u> | | Method of Shipment: <u>Fed Ex</u> Bill of Lading/Air Bill No.: <u>See OSPC</u> | | | | | | | |
| SAMPLE ANALYSIS | | | | | | | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | Sample Date | Sample Time | Preservation | Cool 4C | Cool 4C | None |
| J1KN42 | SOIL | 8-8-11 | 1240 | 8-8-11 | 1310 | G/P | G/P | | |
| J1KN43 | SOIL | 8-8-11 | 1250 | 8-8-11 | 1320 | I | I | | |
| J1KN44 | SOIL | 8-8-11 | 1250 | 8-8-11 | 1320 | I | 60mL | 60mL | 60mL |
| J1KN45 | SOIL | 8-8-11 | 1250 | 8-8-11 | 1320 | I | 60mL | 60mL | 60mL |
| J1KN46 | SOIL | 8-8-11 | 1250 | 8-8-11 | 1320 | I | 60mL | 60mL | 60mL |
| SPECIAL INSTRUCTIONS | | | | | | | | | |
| (1) ICP Metals - 6010TR (Client 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) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chlorine, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470 (Mercury) | | | | | | | | | |
| CHAIN OF POSSESSION | | | | | | | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time |
| <u>K. Lucas</u> | <u>8-8-11 1310</u> | <u>Joan Kessner</u> | <u>8-8-11 1310</u> | <u>Joan Kessner</u> | <u>8-8-11 1320</u> | <u>A. Parker</u> | <u>8-8-11</u> | <u>A. Parker</u> | <u>8-9-11</u> |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time |
| <u>Joan Kessner</u> | <u>8-8-11 1320</u> | <u>A. Parker</u> | <u>8-8-11</u> | <u>A. Parker</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time |
| <u>A. Parker</u> | <u>8-9-11</u> | <u>WCH</u> | <u>8-9-11</u> | <u>WCH</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time |
| <u>WCH</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time |
| <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | Relinquished By/Removed From | Date/Time |
| <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> | <u>Fed Ex</u> | <u>8-9-11</u> |
| LABORATORY SECTION | Received By | Title | | LABORATORY SECTION | Received By | Title | | LABORATORY SECTION | Received By |
| FINAL SAMPLE DISPOSITION | Disposal Method | Date/Time | | FINAL SAMPLE DISPOSITION | Disposal Method | Date/Time | | FINAL SAMPLE DISPOSITION | Disposal Method |
| | | | | | | | | | |

REVIEWED BY AL
 DATE 8-9-11

JP0260

8/8/11



Project 28002142 ⁻⁶⁰⁷⁰⁷² _{-Solid}

Analytical Due:

Report Due: 8/17/11 (rush sat, TAT)

Sample Check-in List

Date/Time Received: 8/10/11 1030 GM Screen Result 12 microR/hr

Client: Washington Closure Hanford SDG #: 5P0260 NA [] SAF #: RC-074 NA []

Job Number: 19013 Chain of Custody # RC-074-239

Shipping Container ID: ERC-99-061 Air Bill # 7950 6018 4592

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: 2.5 NA [] 5. Vermiculite/packing materials is NA [] Wet [] Dry
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? NA [] Yes [] No
8. Samples have:
 - Tape Hazard Labels
 - Custody Seals Appropriate Sample Labels
9. Samples are:
 - In Good Condition Leaking
 - Broken Have Air Bubbles
 (Only for samples requiring no head space.)
10. Sample pH taken? NA [] pH<2 [] pH>2 [] pH>9 [] Amount HNO₃ 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: W. Phillip Date: 8/10/11

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

Client Informed on _____ by _____ Person Contacted _____

[] No action necessary; process as is.

Project Manager Silva Date 8/11/11

ERC-99-061 2.5°

From: (509) 376-7768
1162 SHIPPING DEPT
US DOE
2355 STEVENS DR
RICHLAND, WA 99354

Origin ID: PSCA



J11201104290225

Ship Date: 09AUG11
ActWgt: 73.0 LB
CAD: 5851986/INET3180

Delivery Address Bar Code



SHIP TO: (303) 736-0100
KAE YODER
TEST AMERICA
4955 YARROW ST # A100827

BILL THIRD PARTY

Ref # R60351 2000
Invoice #
PO #
Dept #

ARVADA, CO 80002

2 of 2

WED - 10 AUG A1
PRIORITY OVERNIGHT

MPS# 7950 6018 4592

0263

Mstr# 7950 6018 4478

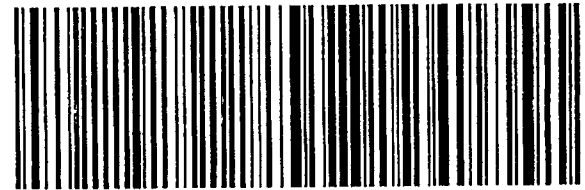
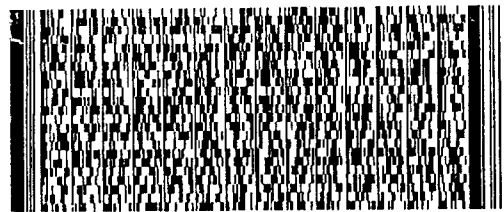
0201

80002

CO-US

DEN

XH WHHA



S0FG1/EEET/F5F4

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.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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 additional 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 value of 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 Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.