EBERLINE SERVICES

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July 30, 2009

Mr. Michael Neely
CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – B6-06
Richland, WA 99352

Reference: **P.O. #33677**
**Eberline Analytical R9-06-112-7847, SDG H4012**

Dear Mr. Neely:

Enclosed is a revised data report for four solid (soil) samples designated under SAF No. R09-017 received at Eberline Analytical on June 25, 2009. Results for the requested Sr-90 reanalysis are reported herein. Also, an error was found in the value reported for the Th-229 tracer yield for the isotopic thorium analysis of the QC Laboratory Control Sample; the yield has been corrected from the originally reported 109% to 101%.

Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville
Senior Program Manager

*NJV/ljb*

*Enclosure: Case Narrative*

## 1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4012 was composed of four solid (soil) samples designated under SAF No. R09-017 with a Project Designation of: ARRA 200-CW-3 – Soil Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

## 2.0 ANALYSIS NOTES

### 2.1 Tritium Analysis

No problems were encountered during the course of the analyses

### 2.2 Total Strontium Analysis

As per client request, samples B20VJ1 and B20VJ2 were reanalyzed. No problems were encountered during the course of the analyses, however the reanalysis result for sample B20VJ1 was different than previously reported. The original result was 11.9 +/- 0.69 pCi/g, with good duplicate analysis agreement. The reanalysis result was less than the MDA of 0.285 pCi/g, and also had good duplicate analysis agreement.

### 2.3 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

### 2.4 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

### 2.5 Isotopic Thorium Analysis

The Th-229 tracer yield for sample B20W87 was 114%, which is greater than the upper control limit of 110%. No problems were encountered during the course of the analyses.

### 2.6 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

### 2.7 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

### 2.8 Americium-241 Analysis

No problems were encountered during the course of the analyses.

### 2.9 Gamma Spectroscopy Analysis

No problems were encountered during the course of the analyses.

## 3.0 Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

N. Joseph Verville
Senior Program Manager

7/30/09
Date

# EBERLINE SERVICES/RICHMOND
## SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## SUMMARY DATA SECTION

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Prepared by

Reviewed by

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 07/30/09

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG H4012

# ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG_H4012

# ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

## LAB SAMPLE SUMMARY

SDG 7847
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG H4012

| LAB SAMPLE ID | CLIENT SAMPLE ID | LOCATION | MATRIX | LEVEL | SAF NO | CHAIN OF CUSTODY | COLLECTED |
|---|---|---|---|---|---|---|---|
| R906112-01 | B20VJ1 | UPR-N-2;I-001 Testpit #1 | SOLID | | R09-017 | R09-017-149 | 06/17/09 13:10 |
| R906112-02 | B20VJ2 | UPR-N-2;I-001DTestpit #1 | SOLID | | R09-017 | R09-017-151 | 06/17/09 13:10 |
| R906112-03 | B20W87 | 216-N-6;I-013 Testpit #1 | SOLID | | R09-017 | R09-017-232 | 06/09/09 10:30 |
| R906112-04 | B20W88 | 216-N-6;I-014 Testpit #1 | SOLID | | R09-017 | R09-017-233 | 06/10/09 08:30 |
| R906112-05 | Lab Control Sample | | SOLID | | R09-017 | | |
| R906112-06 | Method Blank | | SOLID | | R09-017 | | |
| R906112-07 | Duplicate (R906112-01) | UPR-N-2;I-001 Testpit #1 | SOLID | | R09-017 | | 06/17/09 13:10 |
| R906112-08 | Lab Control Sample | | SOLID | | R09-017 | | |
| R906112-09 | Method Blank | | SOLID | | R09-017 | | |
| R906112-10 | Duplicate (R906112-01) | UPR-N-2;I-001 Testpit #1 | SOLID | | R09-017 | | 06/17/09 13:10 |
| R906112-11 | Lab Control Sample | | SOLID | | R09-017 | | |
| R906112-12 | Method Blank | | SOLID | | R09-017 | | |
| R906112-13 | Duplicate (R906112-01) | UPR-N-2;I-001 Testpit #1 | SOLID | | R09-017 | | 06/17/09 13:10 |

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SDG 7847
Contact N. Joseph Verville

SAMPLE DELIVERY GROUP H4012

## QC SUMMARY

Client CHPRC
Contract No. 33677
Case no SDG H4012

| QC BATCH | CHAIN OF CUSTODY | CLIENT SAMPLE ID | MATRIX | % SOLIDS | SAMPLE AMOUNT | BASIS AMOUNT | DAYS SINCE RECEIVED | DAYS SINCE COLL | LAB SAMPLE ID | DEPARTMENT SAMPLE ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 7847 | R09-017-149 | B20VJ1 | SOLID | 91.9 | 584.8 g | | 06/25/09 | 8 | R906112-01 | 7847-001 |
| | R09-017-151 | B20VJ2 | SOLID | 91.8 | 554.8 g | | 06/25/09 | 8 | R906112-02 | 7847-002 |
| | R09-017-232 | B20W87 | SOLID | 96.0 | 562.1 g | | 06/25/09 | 16 | R906112-03 | 7847-003 |
| | R09-017-233 | B20W88 | SOLID | 97.2 | 697.0 g | | 06/25/09 | 15 | R906112-04 | 7847-004 |
| | | Method Blank | SOLID | | | | | | R906112-06 | 7847-006 |
| | | Method Blank | SOLID | | | | | | R906112-09 | 7847-009 |
| | | Method Blank | SOLID | | | | | | R906112-12 | 7847-012 |
| | | Lab Control Sample | SOLID | | | | | | R906112-05 | 7847-005 |
| | | Lab Control Sample | SOLID | | | | | | R906112-08 | 7847-008 |
| | | Lab Control Sample | SOLID | | | | | | R906112-11 | 7847-011 |
| | | Duplicate (R906112-01) | SOLID | 91.9 | 584.8 g | | 06/25/09 | 8 | R906112-07 | 7847-007 |
| | | Duplicate (R906112-01) | SOLID | 91.9 | 584.8 g | | 06/25/09 | 8 | R906112-10 | 7847-010 |
| | | Duplicate (R906112-01) | SOLID | | 584.8 g | | 06/25/09 | 8 | R906112-13 | 7847-013 |

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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

## PREP BATCH SUMMARY

SDG 7847
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG H4012

| TEST | MATRIX | METHOD | PREPARATION BATCH | ERROR 2σ % | PLANCHETS ANALYZED CLIENT | MORE | RE | BLANK | LCS | DUP/ORIG | MS/ORIG | QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alpha Spectroscopy | | | | | | | | | | | | |
| AM | SOLID | Americium 241 in Solids | 7197-186 | 8.0 | 4 | | | 1 | 1 | 1/1 | | |
| PU | SOLID | Plutonium, Isotopic in Solids | 7197-186 | 8.0 | 4 | | | 1 | 1 | 1/1 | | |
| TH | SOLID | Thorium, Isotopic in Solids | 7197-186 | 8.0 | 4 | | | 1 | 1 | 1/1 | | |
| U | SOLID | Uranium, Isotopic in Solids | 7197-186 | 8.0 | 4 | | | 1 | 1 | 1/1 | | |
| Beta Counting | | | | | | | | | | | | |
| SR | SOLID | Total Strontium in Solids | 7197-186 | 10.4 | 2 | | | 1 | 1 | | | |
| | | | 7197-186B | 10.4 | 2 | | | 1 | 1 | 1/1 | | |
| TC | SOLID | Technetium 99 in Solids | 7197-186 | 13.2 | 4 | | | 1 | 1 | 1/1 | | |
| Gamma Spectroscopy | | | | | | | | | | | | |
| GAM | SOLID | Gamma Scan | 7197-186 | 7.0 | 4 | | | 1 | 1 | 1/1 | | |
| Liquid Scintillation Counting | | | | | | | | | | | | |
| H | SOLID | Tritium in Solids | 7197-186 | 10.0 | 4 | | | 1 | 1 | 1/1 | | |
| NI_L | SOLID | Nickel 63 in Solids | 7197-186 | 11.2 | 4 | | | 1 | 1 | 1/1 | | |

Blank, LCS, Duplicate and Spike planchets are those in the same preparation batch as some Client sample.

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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

## LAB WORK SUMMARY

SDG 7847
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG H4012

| LAB SAMPLE / COLLECTED / RECEIVED | CLIENT SAMPLE ID / LOCATION / CUSTODY | MATRIX | SAF No | PLANCHET | TEST | SUF-FIX | ANALYZED | REVIEWED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|---|---|
| R906112-01 | B20VJ1 | | | 7847-001 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| 06/17/09 | UPR-N-2;I-001 Testpit #1 | SOLID | | 7847-001 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| 06/25/09 | R09-017-149 | | R09-017 | 7847-001 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| | | | | 7847-001 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| | | | | 7847-001 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-001 | SR | A1 | 07/28/09 | 07/29/09 | BW | Total Strontium in Solids |
| | | | | 7847-001 | TC | | 06/30/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-001 | TH | | 06/29/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-001 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |
| R906112-02 | B20VJ2 | | | 7847-002 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| 06/17/09 | UPR-N-2;I-001D | Testpit #1 | SOLID | 7847-002 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| 06/25/09 | R09-017-151 | | R09-017 | 7847-002 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| | | | | 7847-002 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| | | | | 7847-002 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-002 | SR | A1 | 07/28/09 | 07/29/09 | BW | Total Strontium in Solids |
| | | | | 7847-002 | TC | | 06/30/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-002 | TH | | 06/29/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-002 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |
| R906112-03 | B20W87 | | | 7847-003 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| 06/09/09 | 216-N-6;I-013 Testpit #1 | SOLID | | 7847-003 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| 06/25/09 | R09-017-232 | | R09-017 | 7847-003 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| | | | | 7847-003 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| | | | | 7847-003 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-003 | SR | | 06/29/09 | 07/02/09 | BW | Total Strontium in Solids |
| | | | | 7847-003 | TC | | 07/01/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-003 | TH | | 06/29/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-003 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |
| R906112-04 | B20W88 | | | 7847-004 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| 06/10/09 | 216-N-6;I-014 Testpit #1 | SOLID | | 7847-004 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| 06/25/09 | R09-017-233 | | R09-017 | 7847-004 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| | | | | 7847-004 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| | | | | 7847-004 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-004 | SR | | 06/29/09 | 07/02/09 | BW | Total Strontium in Solids |
| | | | | 7847-004 | TC | | 07/01/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-004 | TH | | 06/29/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-004 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |

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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## WORK SUMMARY, cont.

Client CHPRC
Contract No. 33677
Case no SDG H4012

| LAB SAMPLE COLLECTED RECEIVED | CLIENT SAMPLE ID LOCATION CUSTODY | SAF No | MATRIX | PLANCHET | TEST | SUF-FIX | ANALYZED | REVIEWED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|---|---|
| R906112-05 | Lab Control Sample | | | 7847-005 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| | | | SOLID | 7847-005 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| | | R09-017 | | 7847-005 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-005 | SR | | 06/29/09 | 07/02/09 | BW | Total Strontium in Solids |
| | | | | 7847-005 | TC | | 06/29/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-005 | TH | | 06/30/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-005 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |
| R906112-06 | Method Blank | | | 7847-006 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| | | | SOLID | 7847-006 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| | | R09-017 | | 7847-006 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-006 | SR | | 06/29/09 | 07/02/09 | BW | Total Strontium in Solids |
| | | | | 7847-006 | TC | | 06/30/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-006 | TH | | 06/29/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-006 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |
| R906112-07 | Duplicate (R906112-01) | | | 7847-007 | AM | | 06/29/09 | 06/29/09 | BW | Americium 241 in Solids |
| 06/17/09 | UPR-N-2;I-001 Testpit #1 | | SOLID | 7847-007 | GAM | | 06/26/09 | 06/29/09 | CSS | Gamma Scan |
| 06/25/09 | | R09-017 | | 7847-007 | PU | | 06/30/09 | 06/30/09 | BW | Plutonium, Isotopic in Solids |
| | | | | 7847-007 | TC | | 06/29/09 | 07/01/09 | BW | Technetium 99 in Solids |
| | | | | 7847-007 | TH | | 06/29/09 | 06/30/09 | BW | Thorium, Isotopic in Solids |
| | | | | 7847-007 | U | | 06/29/09 | 06/29/09 | BW | Uranium, Isotopic in Solids |
| R906112-08 | Lab Control Sample | | | 7847-008 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| | | | SOLID | 7847-008 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| | | R09-017 | | | | | | | | |
| R906112-09 | Method Blank | | | 7847-009 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| | | | SOLID | 7847-009 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| | | R09-017 | | | | | | | | |
| R906112-10 | Duplicate (R906112-01) | | | 7847-010 | H | | 07/01/09 | 07/02/09 | BW | Tritium in Solids |
| 06/17/09 | UPR-N-2;I-001 Testpit #1 | | SOLID | 7847-010 | NI_L | | 06/30/09 | 07/01/09 | BW | Nickel 63 in Solids |
| 06/25/09 | | R09-017 | | | | | | | | |
| R906112-11 | Lab Control Sample | | | 7847-011 | SR | | 07/28/09 | 07/29/09 | BW | Total Strontium in Solids |
| | | | SOLID | | | | | | | |
| | | R09-017 | | | | | | | | |

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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## WORK SUMMARY, cont.

Client CHPRC
Contract No. 33677
Case no SDG H4012

| LAB SAMPLE COLLECTED RECEIVED | CLIENT SAMPLE ID LOCATION CUSTODY | SAF No | MATRIX | PLANCHET | TEST | SUF-FIX | ANALYZED | REVIEWED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|---|---|
| R906112-12 | Method Blank | R09-017 | SOLID | 7847-012 | SR | | 07/28/09 | 07/29/09 | BW | Total Strontium in Solids |
| R906112-13<br>06/17/09<br>06/25/09 | Duplicate (R906112-01)<br>UPR-N-2;I-001 Testpit #1 | R09-017 | SOLID | 7847-013 | SR | | 07/28/09 | 07/29/09 | BW | Total Strontium in Solids |

## COUNTS OF TESTS BY SAMPLE TYPE

| TEST | SAF No | METHOD | REFERENCE | CLIENT | MORE | RE | BLANK | LCS | DUP SPIKE | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| AM | R09-017 | Americium 241 in Solids | AMCMISO_IE_PLATE_AEA | 4 | | | 1 | 1 | 1 | 7 |
| GAM | R09-017 | Gamma Scan | GAMMA_GS | 4 | | | 1 | 1 | 1 | 7 |
| H | R09-017 | Tritium in Solids | TRITIUM_COX_LSC | 4 | | | 1 | 1 | 1 | 7 |
| NI_L | R09-017 | Nickel 63 in Solids | NI63_LSC | 4 | | | 1 | 1 | 1 | 7 |
| PU | R09-017 | Plutonium, Isotopic in Solids | PUISO_PLATE_AEA | 4 | | | 1 | 1 | 1 | 7 |
| SR | R09-017 | Total Strontium in Solids | SRTOT_SEP_PRECIP_GPC | 4 | | | 2 | 2 | 1 | 9 |
| TC | R09-017 | Technetium 99 in Solids | TC99_TR_SEP_GPC | 4 | | | 1 | 1 | 1 | 7 |
| TH | R09-017 | Thorium, Isotopic in Solids | THISO_IE_PLATE_AEA | 4 | | | 1 | 1 | 1 | 7 |
| U | R09-017 | Uranium, Isotopic in Solids | UISO_PLATE_AEA | 4 | | | 1 | 1 | 1 | 7 |
| TOTALS | | | | 36 | | | 10 | 10 | 9 | 65 |

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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-006 Method Blank

## METHOD BLANK

| | | | |
|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC SDG H4012 |
| Contact | N. Joseph Verville | Contract | No. 33677 |
| Lab sample id | R906112-06 | Client sample id | Method Blank |
| Dept sample id | 7847-006 | Material/Matrix | SOLID |
| | | SAF No | R09-017 |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Total Strontium | SR-RAD | 0.028 | 0.21 | 0.419 | 1.00 | U | SR |
| Technetium 99 | 14133-76-7 | 0.171 | 0.26 | 0.428 | 15.0 | U | TC |
| Thorium 228 | 14274-82-9 | -0.065 | 0.13 | 0.358 | 1.00 | U | TH |
| Thorium 230 | 14269-63-7 | 0.129 | 0.19 | 0.310 | 1.00 | U | TH |
| Thorium 232 | TH-232 | 0 | 0.065 | 0.247 | 1.00 | U | TH |
| Uranium 233/234 | U-233/234 | 0 | 0.068 | 0.258 | 1.00 | U | U |
| Uranium 235 | 15117-96-1 | 0 | 0.082 | 0.313 | 1.00 | U | U |
| Uranium 238 | U-238 | 0 | 0.068 | 0.258 | 1.00 | U | U |
| Americium 241 | 14596-10-2 | 0 | 0.17 | 0.321 | 1.00 | U | AM |
| Plutonium 238 | 13981-16-3 | 0 | 0.054 | 0.207 | 1.00 | U | PU |
| Plutonium 239/240 | PU-239/240 | 0.027 | 0.054 | 0.207 | 1.00 | U | PU |
| Beryllium 7 | 13966-02-4 | U | | 0.406 | | U | GAM |
| Potassium 40 | 13966-00-2 | U | | 1.54 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.054 | 0.050 | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.399 | | U | GAM |
| Antimony 125 | 14234-35-6 | U | | 0.126 | | U | GAM |
| Cesium 134 | 13967-70-9 | U | | 0.089 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.110 | 0.100 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.157 | 0.100 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.148 | 0.100 | U | GAM |
| Europium 155 | 14391-16-3 | U | | 0.137 | 0.100 | U | GAM |
| Niobium 94 | 14681-63-1 | U | | 0.044 | | U | GAM |
| Radium 226 | 13982-63-3 | U | | 0.122 | | U | GAM |
| Radium 228 | 15262-20-1 | U | | 0.256 | | U | GAM |

ARRA 200-CW-3 - Soil Sampling

QC-BLANK #70147

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-009 Method Blank

## METHOD BLANK

| | | | | |
|---|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC | SDG_H4012 |
| Contact | N. Joseph Verville | Contract | No. 33677 | |
| Lab sample id | R906112-09 | Client sample id | Method Blank | |
| Dept sample id | 7847-009 | Material/Matrix | | SOLID |
| | | SAF No | R09-017 | |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Tritium | 10028-17-8 | 2.10 | 3.9 | 6.60 | 400 | U | H |
| Nickel 63 | 13981-37-8 | 1.61 | 1.9 | 3.12 | 30.0 | U | NI_L |

ARRA 200-CW-3 - Soil Sampling

QC-BLANK #70172

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-012

Method Blank

## METHOD BLANK

| | | | | | |
|---|---|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC | SDG_H4012 | |
| Contact | N. Joseph Verville | Contract | No. 33677 | | |
| Lab sample id | R906112-12 | Client sample id | Method Blank | | |
| Dept sample id | 7847-012 | Material/Matrix | | SOLID | |
| | | SAF No | R09-017 | | |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Total Strontium | SR-RAD | 0.073 | 0.18 | 0.358 | 1.00 | U | SR |

ARRA 200-CW-3 - Soil Sampling

QC-BLANK #70427

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-005

Lab Control Sample

## LAB CONTROL SAMPLE

SDG 7847
Contact N. Joseph Verville

Client/Case no CHPRC SDG H4012
Contract No. 33677

Lab sample id R906112-05
Dept sample id 7847-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No R09-017

| ANALYTE | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST | ADDED pCi/g | 2σ ERR pCi/g | REC % | 3σ LMTS (TOTAL) | PROTOCOL LIMITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Strontium | 12.4 | 0.85 | 0.434 | 1.00 | | SR | 11.4 | 0.46 | 109 | 79-121 | 80-120 |
| Technetium 99 | 118 | 2.0 | 0.544 | 15.0 | | TC | 109 | 4.4 | 108 | 78-122 | 80-120 |
| Thorium 230 | 35.9 | 4.0 | 0.327 | 1.00 | | TH | 37.8 | 1.5 | 95 | 80-120 | 80-120 |
| Uranium 233/234 | 20.2 | 2.5 | 1.08 | 1.00 | | U | 18.6 | 0.74 | 109 | 75-125 | 80-120 |
| Uranium 235 | 15.2 | 2.1 | 0.302 | 1.00 | | U | 15.1 | 0.60 | 101 | 75-125 | 80-120 |
| Uranium 238 | 19.8 | 2.5 | 1.04 | 1.00 | | U | 20.2 | 0.81 | 98 | 77-123 | 80-120 |
| Americium 241 | 9.70 | 1.2 | 0.193 | 1.00 | | AM | 10.1 | 0.40 | 96 | 78-122 | 80-120 |
| Plutonium 238 | 11.4 | 1.2 | 0.192 | 1.00 | | PU | 11.6 | 0.46 | 98 | 80-120 | 80-120 |
| Plutonium 239/240 | 13.3 | 1.4 | 0.154 | 1.00 | | PU | 13.2 | 0.53 | 101 | 79-121 | 80-120 |
| Cobalt 60 | 1.37 | 0.12 | 0.084 | 0.050 | | GAM | 1.34 | 0.054 | 102 | 82-118 | 80-120 |
| Cesium 137 | 1.69 | 0.11 | 0.089 | 0.100 | | GAM | 1.63 | 0.065 | 104 | 84-116 | 80-120 |

ARRA 200-CW-3 - Soil Sampling

QC-LCS #70146

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-008

Lab Control Sample

## LAB CONTROL SAMPLE

SDG 7847
Contact N. Joseph Verville

Client/Case no CHPRC SDG H4012
Contract No. 33677

Lab sample id R906112-08
Dept sample id 7847-008

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No R09-017

| ANALYTE | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST | ADDED pCi/g | 2σ ERR pCi/g | REC % | 3σ LMTS (TOTAL) | PROTOCOL LIMITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tritium | 801 | 18 | 6.88 | 400 | | H | 962 | 38 | 83 | 86-114 | 80-120 |
| Nickel 63 | 275 | 7.0 | 3.14 | 30.0 | | NI_L | 293 | 12 | 94 | 83-117 | 80-120 |

ARRA 200-CW-3 - Soil Sampling

QC-LCS #70171

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-011

Lab Control Sample

## LAB CONTROL SAMPLE

SDG 7847

Contact N. Joseph Verville

Client/Case no CHPRC SDG H4012

Contract No. 33677

Lab sample id R906112-11

Dept sample id 7847-011

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No R09-017

| ANALYTE | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST | ADDED pCi/g | 2σ ERR pCi/g | REC % | 3σ LMTS (TOTAL) | PROTOCOL LIMITS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Strontium | 11.7 | 0.76 | 0.369 | 1.00 | | SR | 11.3 | 0.45 | 104 | 80-120 | 80-120 |

ARRA 200-CW-3 - Soil Sampling

QC-LCS #70426

Lab id EBRLNE

Protocol CHPRC

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-007

B20VJ1

## DUPLICATE

| | | | | | |
|---|---|---|---|---|---|
| SDG | 7847 | | | Client/Case no | CHPRC SDG H4012 |
| Contact | N. Joseph Verville | | | Contract | No. 33677 |
| | DUPLICATE | | ORIGINAL | | |
| Lab sample id | R906112-07 | Lab sample id | R906112-01 | Client sample id | B20VJ1 |
| Dept sample id | 7847-007 | Dept sample id | 7847-001 | Location/Matrix | UPR-N-2;I-001 Testpit #1 SOLID |
| | | Received | 06/25/09 | Collected/Weight | 06/17/09 13:10 584.8 g |
| % solids | 91.9 | % solids | 91.9 | Custody/SAF No | R09-017-149 R09-017 |

| ANALYTE | DUPLICATE pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST | ORIGINAL pCi/g | 2σ ERR (COUNT) | MDA pCi/g | QUALI-FIERS | RPD % | 2σ TOT | PROT LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Technetium 99 | 0.030 | 0.26 | 0.491 | 15.0 | U | TC | 0.208 | 0.25 | 0.441 | U | - | | |
| Thorium 228 | 0.504 | 0.29 | 0.345 | 1.00 | | TH | 0.653 | 0.31 | 0.294 | | 26 | 74 | 35 |
| Thorium 230 | 0.144 | 0.22 | 0.275 | 1.00 | U | TH | 0.192 | 0.23 | 0.293 | U | - | | |
| Thorium 232 | 0.396 | 0.22 | 0.275 | 1.00 | | TH | 0.575 | 0.31 | 0.293 | | 37 | 79 | 35 |
| Uranium 233/234 | 0.449 | 0.23 | 0.286 | 1.00 | | U | 0.422 | 0.23 | 0.294 | | 6 | 76 | 35 |
| Uranium 235 | 0 | 0.091 | 0.346 | 1.00 | U | U | 0.046 | 0.093 | 0.356 | U | - | | |
| Uranium 238 | 0.486 | 0.30 | 0.286 | 1.00 | | U | 0.538 | 0.31 | 0.294 | | 10 | 85 | 35 |
| Americium 241 | 0.076 | 0.15 | 0.243 | 1.00 | U | AM | 0.100 | 0.12 | 0.152 | U | - | | |
| Plutonium 238 | 0.099 | 0.12 | 0.219 | 1.00 | U | PU | 0.121 | 0.097 | 0.186 | U | - | | |
| Plutonium 239/240 | 0.020 | 0.040 | 0.152 | 1.00 | U | PU | 0.049 | 0.049 | 0.186 | U | - | | |
| Beryllium 7 | U | | 0.183 | | U | GAM | U | | 0.263 | U | - | | |
| Potassium 40 | 11.1 | 0.49 | 0.272 | | | GAM | 12.2 | 0.72 | 0.389 | | 9 | 12 | 35 |
| Cobalt 60 | U | | 0.024 | 0.050 | U | GAM | U | | 0.037 | U | - | | |
| Ruthenium 106 | U | | 0.212 | | U | GAM | U | | 0.292 | U | - | | |
| Antimony 125 | U | | 0.058 | | U | GAM | U | | 0.086 | U | - | | |
| Cesium 134 | U | | 0.033 | | U | GAM | U | | 0.048 | U | - | | |
| Cesium 137 | U | | 0.067 | 0.100 | U | GAM | U | | 0.069 | U | - | | |
| Europium 152 | U | | 0.062 | 0.100 | U | GAM | U | | 0.094 | U | - | | |
| Europium 154 | U | | 0.085 | 0.100 | U | GAM | U | | 0.125 | U | - | | |
| Europium 155 | U | | 0.055 | 0.100 | U | GAM | U | | 0.082 | U | - | | |
| Niobium 94 | U | | 0.021 | | U | GAM | U | | 0.030 | U | - | | |
| Radium 226 | 0.428 | 0.055 | 0.053 | | | GAM | 0.405 | 0.075 | 0.078 | | 6 | 24 | 35 |
| Radium 228 | 0.686 | 0.11 | 0.111 | | | GAM | 0.790 | 0.17 | 0.168 | | 14 | 29 | 35 |

ARRA 200-CW-3 - Soil Sampling

QC-DUP#1 70148

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DUP |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-010

B20VJ1

## DUPLICATE

| | | | | | |
|---|---|---|---|---|---|
| SDG | 7847 | | | Client/Case no | CHPRC SDG H4012 |
| Contact | N. Joseph Verville | | | Contract | No. 33677 |
| DUPLICATE | | ORIGINAL | | | |
| Lab sample id | R906112-10 | Lab sample id | R906112-01 | Client sample id | B20VJ1 |
| Dept sample id | 7847-010 | Dept sample id | 7847-001 | Location/Matrix | UPR-N-2;I-001 Testpit #1 SOLID |
| | | Received | 06/25/09 | Collected/Weight | 06/17/09 13:10 584.8 g |
| % solids | 91.9 | % solids | 91.9 | Custody/SAF No | R09-017-149 R09-017 |

| ANALYTE | DUPLICATE pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST | ORIGINAL pCi/g | 2σ ERR (COUNT) | MDA pCi/g | QUALI-FIERS | RPD % | 2σ TOT | PROT LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tritium | 1.12 | 3.6 | 6.18 | 400 | U | H | -0.095 | 3.6 | 6.26 | U | - | | |
| Nickel 63 | -0.217 | 1.9 | 3.28 | 30.0 | U | NI_L | 0.771 | 1.9 | 3.24 | U | - | | |

ARRA 200-CW-3 - Soil Sampling

QC-DUP#1 70173

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DUP |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-013

B20VJ1

## DUPLICATE

| | | | | | |
|---|---|---|---|---|---|
| SDG | 7847 | | | Client/Case no | CHPRC SDG H4012 |
| Contact | N. Joseph Verville | | | Contract | No. 33677 |
| DUPLICATE | | ORIGINAL | | | |
| Lab sample id | R906112-13 | Lab sample id | R906112-01 | Client sample id | B20VJ1 |
| Dept sample id | 7847-013 | Dept sample id | 7847-001 | Location/Matrix | UPR-N-2;I-001 Testpit #1 SOLID |
| | | Received | 06/25/09 | Collected/Weight | 06/17/09 13:10 584.8 g |
| | | % solids | 91.9 | Custody/SAF No | R09-017-149 R09-017 |

| ANALYTE | DUPLICATE pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST | ORIGINAL pCi/g | 2σ ERR (COUNT) | MDA pCi/g | QUALI-FIERS | RPD % | 2σ TOT | PROT LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Strontium | 0.231 | 0.17 | 0.286 | 1.00 | U | SR | 0.146 | 0.16 | 0.285 | U | - | | |

ARRA 200-CW-3 - Soil Sampling

QC-DUP#1 70428

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DUP |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-001 B20VJ1

## DATA SHEET

| | | | | |
|---|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC | SDG_H4012 |
| Contact | N. Joseph Verville | Contract | No. 33677 | |
| Lab sample id | R906112-01 | Client sample id | B20VJ1 | |
| Dept sample id | 7847-001 | Location/Matrix | UPR-N-2;I-001 Testpit #1 | SOLID |
| Received | 06/25/09 | Collected/Weight | 06/17/09 13:10 | 584.8 g |
| % solids | 91.9 | Custody/SAF No | R09-017-149 | R09-017 |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Tritium | 10028-17-8 | -0.095 | 3.6 | 6.26 | 400 | U | H |
| Nickel 63 | 13981-37-8 | 0.771 | 1.9 | 3.24 | 30.0 | U | NI_L |
| Total Strontium | SR-RAD | 0.146 | 0.16 | 0.285 | 1.00 | U | SR |
| Technetium 99 | 14133-76-7 | 0.208 | 0.25 | 0.441 | 15.0 | U | TC |
| Thorium 228 | 14274-82-9 | 0.653 | 0.31 | 0.294 | 1.00 | | TH |
| Thorium 230 | 14269-63-7 | 0.192 | 0.23 | 0.293 | 1.00 | U | TH |
| Thorium 232 | TH-232 | 0.575 | 0.31 | 0.293 | 1.00 | | TH |
| Uranium 233/234 | U-233/234 | 0.422 | 0.23 | 0.294 | 1.00 | | U |
| Uranium 235 | 15117-96-1 | 0.046 | 0.093 | 0.356 | 1.00 | U | U |
| Uranium 238 | U-238 | 0.538 | 0.31 | 0.294 | 1.00 | | U |
| Americium 241 | 14596-10-2 | 0.100 | 0.12 | 0.152 | 1.00 | U | AM |
| Plutonium 238 | 13981-16-3 | 0.121 | 0.097 | 0.186 | 1.00 | U | PU |
| Plutonium 239/240 | PU-239/240 | 0.049 | 0.049 | 0.186 | 1.00 | U | PU |
| Beryllium 7 | 13966-02-4 | U | | 0.263 | | U | GAM |
| Potassium 40 | 13966-00-2 | 12.2 | 0.72 | 0.389 | | | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.037 | 0.050 | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.292 | | U | GAM |
| Antimony 125 | 14234-35-6 | U | | 0.086 | | U | GAM |
| Cesium 134 | 13967-70-9 | U | | 0.048 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.069 | 0.100 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.094 | 0.100 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.125 | 0.100 | U | GAM |
| Europium 155 | 14391-16-3 | U | | 0.082 | 0.100 | U | GAM |
| Niobium 94 | 14681-63-1 | U | | 0.030 | | U | GAM |
| Radium 226 | 13982-63-3 | 0.405 | 0.075 | 0.078 | | | GAM |
| Radium 228 | 15262-20-1 | 0.790 | 0.17 | 0.168 | | | GAM |

ARRA 200-CW-3 - Soil Sampling

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-002 B20VJ2

## DATA SHEET

| | | | |
|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC SDG_H4012 |
| Contact | N. Joseph Verville | Contract | No. 33677 |
| Lab sample id | R906112-02 | Client sample id | B20VJ2 |
| Dept sample id | 7847-002 | Location/Matrix | UPR-N-2;I-001DTestpit #1 SOLID |
| Received | 06/25/09 | Collected/Weight | 06/17/09 13:10 554.8 g |
| % solids | 91.8 | Custody/SAF No | R09-017-151 R09-017 |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Tritium | 10028-17-8 | 2.04 | 3.7 | 6.12 | 400 | U | H |
| Nickel 63 | 13981-37-8 | -0.086 | 1.9 | 3.26 | 30.0 | U | NI_L |
| Total Strontium | SR-RAD | -0.015 | 0.14 | 0.287 | 1.00 | U | SR |
| Technetium 99 | 14133-76-7 | 0.143 | 0.25 | 0.417 | 15.0 | U | TC |
| Thorium 228 | 14274-82-9 | 0.772 | 0.41 | 0.311 | 1.00 | | TH |
| Thorium 230 | 14269-63-7 | 0.081 | 0.24 | 0.310 | 1.00 | U | TH |
| Thorium 232 | TH-232 | 0.365 | 0.25 | 0.310 | 1.00 | | TH |
| Uranium 233/234 | U-233/234 | 0.445 | 0.34 | 0.426 | 1.00 | | U |
| Uranium 235 | 15117-96-1 | 0.067 | 0.13 | 0.515 | 1.00 | U | U |
| Uranium 238 | U-238 | 0.668 | 0.34 | 0.426 | 1.00 | | U |
| Americium 241 | 14596-10-2 | 0 | 0.073 | 0.278 | 1.00 | U | AM |
| Plutonium 238 | 13981-16-3 | 0 | 0.15 | 0.409 | 1.00 | U | PU |
| Plutonium 239/240 | PU-239/240 | 0.074 | 0.15 | 0.283 | 1.00 | U | PU |
| Beryllium 7 | 13966-02-4 | U | | 0.279 | | U | GAM |
| Potassium 40 | 13966-00-2 | 13.9 | 0.83 | 0.336 | | | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.042 | 0.050 | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.330 | | U | GAM |
| Antimony 125 | 14234-35-6 | U | | 0.088 | | U | GAM |
| Cesium 134 | 13967-70-9 | U | | 0.054 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.064 | 0.100 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.105 | 0.100 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.127 | 0.100 | U | GAM |
| Europium 155 | 14391-16-3 | U | | 0.086 | 0.100 | U | GAM |
| Niobium 94 | 14681-63-1 | U | | 0.033 | | U | GAM |
| Radium 226 | 13982-63-3 | 0.512 | 0.078 | 0.073 | | | GAM |
| Radium 228 | 15262-20-1 | 0.596 | 0.16 | 0.174 | | | GAM |

ARRA 200-CW-3 - Soil Sampling

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-003 B20W87

## DATA SHEET

| | | | | |
|---|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC | SDG_H4012 |
| Contact | N. Joseph Verville | Contract | No. 33677 | |
| Lab sample id | R906112-03 | Client sample id | B20W87 | |
| Dept sample id | 7847-003 | Location/Matrix | 216-N-6;I-013 Testpit #1 | SOLID |
| Received | 06/25/09 | Collected/Weight | 06/09/09 10:30 | 562.1 g |
| % solids | 96.0 | Custody/SAF No | R09-017-232 | R09-017 |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Tritium | 10028-17-8 | 0.685 | 3.8 | 6.45 | 400 | U | H |
| Nickel 63 | 13981-37-8 | 7.07 | 2.3 | 3.42 | 30.0 | | NI_L |
| Total Strontium | SR-RAD | 22.5 | 0.91 | 0.294 | 1.00 | | SR |
| Technetium 99 | 14133-76-7 | 0.082 | 0.19 | 0.436 | 15.0 | U | TC |
| Thorium 228 | 14274-82-9 | 0.472 | 0.24 | 0.283 | 1.00 | | TH |
| Thorium 230 | 14269-63-7 | 0.265 | 0.24 | 0.282 | 1.00 | U | TH |
| Thorium 232 | TH-232 | 0.560 | 0.24 | 0.226 | 1.00 | | TH |
| Uranium 233/234 | U-233/234 | 0.652 | 0.28 | 0.262 | 1.00 | | U |
| Uranium 235 | 15117-96-1 | 0.083 | 0.083 | 0.318 | 1.00 | U | U |
| Uranium 238 | U-238 | 0.515 | 0.28 | 0.262 | 1.00 | | U |
| Americium 241 | 14596-10-2 | 1.35 | 0.44 | 0.294 | 1.00 | | AM |
| Plutonium 238 | 13981-16-3 | 0 | 0.11 | 0.269 | 1.00 | U | PU |
| Plutonium 239/240 | PU-239/240 | 13.1 | 1.6 | 0.215 | 1.00 | | PU |
| Beryllium 7 | 13966-02-4 | U | | 2.16 | | U | GAM |
| Potassium 40 | 13966-00-2 | 13.6 | 0.75 | 0.311 | | | GAM |
| Cobalt 60 | 10198-40-0 | 0.741 | 0.073 | 0.065 | 0.050 | | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 1.18 | | U | GAM |
| Antimony 125 | 14234-35-6 | U | | 0.568 | | U | GAM |
| Cesium 134 | 13967-70-9 | U | | 0.089 | | U | GAM |
| Cesium 137 | 10045-97-3 | 153 | 0.60 | 0.168 | 0.100 | | GAM |
| Europium 152 | 14683-23-9 | 18.1 | 0.61 | 0.698 | 0.100 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.943 | 0.100 | U | GAM |
| Europium 155 | 14391-16-3 | U | | 0.442 | 0.100 | U | GAM |
| Niobium 94 | 14681-63-1 | U | | 0.084 | | U | GAM |
| Radium 226 | 13982-63-3 | 0.373 | 0.19 | 0.250 | | | GAM |
| Radium 228 | 15262-20-1 | 1.03 | 0.21 | 0.265 | | | GAM |

ARRA 200-CW-3 - Soil Sampling

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

7847-004 B20W88

## DATA SHEET

| | | | |
|---|---|---|---|
| SDG | 7847 | Client/Case no | CHPRC SDG H4012 |
| Contact | N. Joseph Verville | Contract | No. 33677 |
| Lab sample id | R906112-04 | Client sample id | B20W88 |
| Dept sample id | 7847-004 | Location/Matrix | 216-N-6;I-014 Testpit #1 SOLID |
| Received | 06/25/09 | Collected/Weight | 06/10/09 08:30 697.0 g |
| % solids | 97.2 | Custody/SAF No | R09-017-233 R09-017 |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Tritium | 10028-17-8 | 0.289 | 3.7 | 6.35 | 400 | U | H |
| Nickel 63 | 13981-37-8 | 2.48 | 2.0 | 3.30 | 30.0 | U | NI_L |
| Total Strontium | SR-RAD | 3.03 | 0.35 | 0.276 | 1.00 | | SR |
| Technetium 99 | 14133-76-7 | 0.149 | 0.21 | 0.408 | 15.0 | U | TC |
| Thorium 228 | 14274-82-9 | 0.342 | 0.30 | 0.509 | 1.00 | U | TH |
| Thorium 230 | 14269-63-7 | 0.265 | 0.23 | 0.290 | 1.00 | U | TH |
| Thorium 232 | TH-232 | 0.531 | 0.31 | 0.290 | 1.00 | | TH |
| Uranium 233/234 | U-233/234 | 0.364 | 0.28 | 0.348 | 1.00 | | U |
| Uranium 235 | 15117-96-1 | 0 | 0.11 | 0.422 | 1.00 | U | U |
| Uranium 238 | U-238 | 0.364 | 0.28 | 0.348 | 1.00 | | U |
| Americium 241 | 14596-10-2 | 0.112 | 0.17 | 0.269 | 1.00 | U | AM |
| Plutonium 238 | 13981-16-3 | 0.051 | 0.10 | 0.242 | 1.00 | U | PU |
| Plutonium 239/240 | PU-239/240 | 0.581 | 0.26 | 0.193 | 1.00 | | PU |
| Beryllium 7 | 13966-02-4 | U | | 0.929 | | U | GAM |
| Potassium 40 | 13966-00-2 | 10.8 | 2.4 | 0.457 | | | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.057 | 0.050 | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.598 | | U | GAM |
| Antimony 125 | 14234-35-6 | U | | 0.241 | | U | GAM |
| Cesium 134 | 13967-70-9 | U | | 0.063 | | U | GAM |
| Cesium 137 | 10045-97-3 | 25.4 | 0.23 | 0.086 | 0.100 | | GAM |
| Europium 152 | 14683-23-9 | 1.53 | 0.18 | 0.247 | 0.100 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.158 | 0.100 | U | GAM |
| Europium 155 | 14391-16-3 | U | | 0.179 | 0.100 | U | GAM |
| Niobium 94 | 14681-63-1 | U | | 0.051 | | U | GAM |
| Radium 226 | 13982-63-3 | 0.470 | 0.12 | 0.113 | | | GAM |
| Radium 228 | 15262-20-1 | 0.516 | 0.24 | 0.225 | | | GAM |

ARRA 200-CW-3 - Soil Sampling

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

| | |
|---|---|
| Test | AM |
| Matrix | SOLID |
| SDG | 7847 |
| Contact | N. Joseph Verville |

## LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

| | |
|---|---|
| Client | CHPRC |
| Contract | No. 33677 |
| Contract | SDG H4012 |

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Americium 241 |
|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U |
| R906112-02 | | | 7847-002 | B20VJ2 | U |
| R906112-03 | | | 7847-003 | B20W87 | 1.35 |
| R906112-04 | | | 7847-004 | B20W88 | U |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok |
| R906112-06 | | | 7847-006 | Method Blank | U |
| R906112-07 | | | 7847-007 | Duplicate (R906112-01) | - U |

Nominal values and limits from method RDLs (pCi/g) 1.00

ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 8.0 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 0.152 | 0.500 | | | 97 | | 151 | | | 12 | 06/29/09 | 06/29 | SS-034 |
| R906112-02 | | | B20VJ2 | 0.278 | 0.500 | | | 66 | | 100 | | | 12 | 06/29/09 | 06/29 | SS-059 |
| R906112-03 | | | B20W87 | 0.294 | 0.500 | | | 76 | | 100 | | | 20 | 06/29/09 | 06/29 | SS-061 |
| R906112-04 | | | B20W88 | 0.269 | 0.500 | | | 86 | | 101 | | | 19 | 06/29/09 | 06/29 | SS-062 |
| R906112-05 | | | Lab Control Sample | 0.193 | 0.500 | | | 90 | | 102 | | | | 06/29/09 | 06/29 | SS-063 |
| R906112-06 | | | Method Blank | 0.321 | 0.500 | | | 79 | | 102 | | | | 06/29/09 | 06/29 | SS-064 |
| R906112-07 | | | Duplicate (R906112-01) | 0.243 | 0.500 | | | 90 | | 103 | | | 12 | 06/29/09 | 06/29 | SS-066 |
| Nominal values and limits from method | | | | 1.00 | 0.500 | | | 30-110 | | 100 | 100 | | 180 | | | |

| PROCEDURES | REFERENCE | AMCMISO_IE_PLATE_AEA |
|---|---|---|
| | SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 1 |
| | CP-963 | Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6 |
| | CP-008 | Heavy Element Electroplating, rev 13 |

| AVERAGES ± 2 SD FOR 7 SAMPLES | | | | |
|---|---|---|---|---|
| MDA | 0.250 | ± | 0.118 |
| YIELD | 83 | ± | 21 |

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-LMS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

Test PU Matrix SOLID
SDG 7847
Contact N. Joseph Verville

## LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4012

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Plutonium 238 | Plutonium 239/240 |
|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U | U |
| R906112-02 | | | 7847-002 | B20VJ2 | U | U |
| R906112-03 | | | 7847-003 | B20W87 | U | 13.1 |
| R906112-04 | | | 7847-004 | B20W88 | U | 0.581 |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok | ok |
| R906112-06 | | | 7847-006 | Method Blank | U | U |
| R906112-07 | | | 7847-007 | Duplicate (R906112-01) | - U | - U |
| Nominal values and limits from method | | | | RDLs (pCi/g) | 1.00 | 1.00 |

ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MAX MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 8.0 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 0.186 | 0.500 | | | 78 | | 128 | | | 13 | 06/30/09 | 06/30 | SS-059 |
| R906112-02 | | | B20VJ2 | 0.409 | 0.500 | | | 76 | | 102 | | | 13 | 06/30/09 | 06/30 | SS-035 |
| R906112-03 | | | B20W87 | 0.269 | 0.500 | | | 84 | | 103 | | | 21 | 06/30/09 | 06/30 | SS-036 |
| R906112-04 | | | B20W88 | 0.242 | 0.500 | | | 91 | | 103 | | | 20 | 06/30/09 | 06/30 | SS-038 |
| R906112-05 | | | Lab Control Sample | 0.192 | 0.500 | | | 72 | | 161 | | | | 06/30/09 | 06/30 | SS-063 |
| R906112-06 | | | Method Blank | 0.207 | 0.500 | | | 77 | | 161 | | | | 06/30/09 | 06/30 | SS-064 |
| R906112-07 | | | Duplicate (R906112-01) | 0.219 | 0.500 | | | 73 | | 162 | | | 13 | 06/30/09 | 06/30 | SS-066 |
| Nominal values and limits from method | | | | 1.00 | 0.500 | | | 30-110 | | 100 | 100 | | 180 | | | |

| PROCEDURES | REFERENCE | PUISO_PLATE_AEA |
|---|---|---|
| | SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 1 |
| | CP-941 | Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 8 |
| | CP-008 | Heavy Element Electroplating, rev 13 |

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.246 ± 0.155
YIELD 79 ± 13

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

Test TH Matrix SOLID
SDG 7847
Contact N. Joseph Verville

## LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4012

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Thorium 230 |
|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U |
| R906112-02 | | | 7847-002 | B20VJ2 | U |
| R906112-03 | | | 7847-003 | B20W87 | U |
| R906112-04 | | | 7847-004 | B20W88 | U |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok |
| R906112-06 | | | 7847-006 | Method Blank | U |
| R906112-07 | | | 7847-007 | Duplicate (R906112-01) | - U |

Nominal values and limits from method RDLs (pCi/g) 1.00
ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MAX MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 8.0 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 0.294 | 0.250 | | | 101 | | 151 | | | 12 | 06/29/09 | 06/29 | SS-031 |
| R906112-02 | | | B20VJ2 | 0.311 | 0.250 | | | 90 | | 151 | | | 12 | 06/29/09 | 06/29 | SS-032 |
| R906112-03 | | | B20W87 | 0.283 | 0.250 | | | 114 | | 151 | | | 20 | 06/29/09 | 06/29 | SS-033 |
| R906112-04 | | | B20W88 | 0.509 | 0.250 | | | 101 | | 151 | | | 19 | 06/29/09 | 06/29 | SS-035 |
| R906112-05 | | | Lab Control Sample | 0.327 | 0.250 | | | 101 | | 156 | | | | 06/29/09 | 06/30 | SS-064 |
| R906112-06 | | | Method Blank | 0.358 | 0.250 | | | 97 | | 151 | | | | 06/29/09 | 06/29 | SS-038 |
| R906112-07 | | | Duplicate (R906112-01) | 0.345 | 0.250 | | | 103 | | 153 | | | 12 | 06/29/09 | 06/29 | SS-054 |
| Nominal values and limits from method | | | | 1.00 | 0.250 | | | 30-110 | | 150 | | | 180 | | | |

| PROCEDURES | REFERENCE | THISO_IE_PLATE_AEA |
|---|---|---|
| | SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 1 |
| | CP-900 | Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1 |
| | CP-008 | Heavy Element Electroplating, rev 13 |

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.347 ± 0.153
YIELD 101 ± 14

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

| | |
|---|---|
| Test | U |
| Matrix | SOLID |
| SDG | 7847 |
| Contact | N. Joseph Verville |

## LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

| | |
|---|---|
| Client | CHPRC |
| Contract | No. 33677 |
| Contract | SDG H4012 |

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | 1: Uranium 233/234 | 2: Uranium 235 | 3: Uranium 238 | RESULT RATIOS (%) 1÷3 | 2σ | 2÷3 | 2σ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | | | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | 0.422 | U | 0.538 | 78 | 62 | 9 | 18 |
| R906112-02 | | | 7847-002 | B20VJ2 | 0.445 | U | 0.668 | 67 | 61 | 10 | 20 |
| R906112-03 | | | 7847-003 | B20W87 | 0.652 | U | 0.515 | 127 | 88 | 16 | 18 |
| R906112-04 | | | 7847-004 | B20W88 | 0.364 | U | 0.364 | 100 | 109 | 0 | 30 |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok | ok | ok | | | | |
| R906112-06 | | | 7847-006 | Method Blank | U | U | U | | | | |
| R906112-07 | | | 7847-007 | Duplicate (R906112-01) | ok | - U | ok | 92 | 74 | 0 | 19 |
| Nominal values and limits from method | | | | RDLs (pCi/g) | 1.00 | 1.00 | 1.00 | 100 | | 4 | |
| ARRA 200-CW-3 - Soil Sampling | | | | | | | | Averages 93 | | 7 | |

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MAX MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 8.0 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 0.356 | 0.500 | | | 76 | | 100 | | | 12 | 06/27/09 | 06/29 | SS-031 |
| R906112-02 | | | B20VJ2 | 0.515 | 0.500 | | | 49 | | 100 | | | 12 | 06/27/09 | 06/29 | SS-032 |
| R906112-03 | | | B20W87 | 0.318 | 0.500 | | | 74 | | 100 | | | 20 | 06/27/09 | 06/29 | SS-033 |
| R906112-04 | | | B20W88 | 0.422 | 0.500 | | | 64 | | 100 | | | 19 | 06/27/09 | 06/29 | SS-034 |
| R906112-05 | | | Lab Control Sample | 1.08 | 0.500 | | | 88 | | 100 | | | | 06/27/09 | 06/29 | SS-035 |
| R906112-06 | | | Method Blank | 0.313 | 0.500 | | | 71 | | 100 | | | | 06/27/09 | 06/29 | SS-036 |
| R906112-07 | | | Duplicate (R906112-01) | 0.346 | 0.500 | | | 63 | | 101 | | | 12 | 06/27/09 | 06/29 | SS-038 |
| Nominal values and limits from method | | | | 1.00 | 0.500 | | | 30-110 | | 100 | 100 | | 180 | | | |

| PROCEDURES | REFERENCE | UISO_PLATE_AEA |
|---|---|---|
| | SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 1 |
| | CP-921 | Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1 |
| | CP-008 | Heavy Element Electroplating, rev 13 |

| AVERAGES ± 2 SD FOR 7 SAMPLES | | | | |
|---|---|---|---|---|
| MDA | 0.479 | ± | 0.549 |
| YIELD | 69 | ± | 24 |

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-LMS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

Test SR Matrix SOLID
SDG 7847
Contact N. Joseph Verville

## LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4012

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Total Strontium |
|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | |
| R906112-03 | | | 7847-003 | B20W87 | 22.5 |
| R906112-04 | | | 7847-004 | B20W88 | 3.03 |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok |
| R906112-06 | | | 7847-006 | Method Blank | U |
| Preparation batch 7197-186B | | | | | |
| R906112-01 | | A1 | 7847-001 | B20VJ1 | U |
| R906112-02 | | A1 | 7847-002 | B20VJ2 | U |
| R906112-11 | | | 7847-011 | Lab Control Sample | ok |
| R906112-12 | | | 7847-012 | Method Blank | U |
| R906112-13 | | | 7847-013 | Duplicate (R906112-01) | - U |

Nominal values and limits from method RDLs (pCi/g) 1.00
ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 10.4 % Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | | |
| R906112-03 | | | B20W87 | 0.294 | 0.800 | | | 94 | | 100 | | | 20 | 06/29/09 | 06/29 | GRB-217 |
| R906112-04 | | | B20W88 | 0.276 | 0.800 | | | 96 | | 100 | | | 19 | 06/29/09 | 06/29 | GRB-218 |
| R906112-05 | | | Lab Control Sample | 0.434 | 0.800 | | | 68 | | 100 | | | | 06/29/09 | 06/29 | GRB-222 |
| R906112-06 | | | Method Blank | 0.419 | 0.800 | | | 85 | | 100 | | | | 06/29/09 | 06/29 | GRB-223 |
| Preparation batch 7197-186B | | | 2σ prep error 10.4 % Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | | |
| R906112-01 | | A1 | B20VJ1 | 0.285 | 1.00 | | | 101 | | 100 | | | 41 | 07/28/09 | 07/28 | GRB-217 |
| R906112-02 | | A1 | B20VJ2 | 0.287 | 1.00 | | | 96 | | 100 | | | 41 | 07/28/09 | 07/28 | GRB-218 |
| R906112-11 | | | Lab Control Sample | 0.369 | 0.800 | | | 94 | | 100 | | | | 07/28/09 | 07/28 | GRB-220 |
| R906112-12 | | | Method Blank | 0.358 | 0.800 | | | 99 | | 100 | | | | 07/28/09 | 07/28 | GRB-221 |
| R906112-13 | | | Duplicate (R906112-01) | 0.286 | 1.00 | | | 96 | | 100 | | | 41 | 07/28/09 | 07/28 | GRB-222 |
| Nominal values and limits from method | | | | 1.00 | 0.800 | | | 40-110 | | 100 | | | 180 | | | |

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

## LAB METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

| | |
|---|---|
| Test | SR Matrix |
| SDG | 7847 |
| Contact | N. Joseph Verville |

| | |
|---|---|
| Client | CHPRC |
| Contract | No. 33677 |
| Contract | SDG H4012 |

| | | |
|---|---|---|
| PROCEDURES | REFERENCE | SRTOT_SEP_PRECIP_GPC |
| | SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 1 |
| | CP-383 | Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1 |

| | | | | |
|---|---|---|---|---|
| AVERAGES ± 2 SD | MDA | 0.334 | ± | 0.124 |
| FOR 9 SAMPLES | YIELD | 92 | ± | 20 |

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-LMS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

| | |
|---|---|
| Test | TC |
| Matrix | SOLID |
| SDG | 7847 |
| Contact | N. Joseph Verville |

## LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

| | |
|---|---|
| Client | CHPRC |
| Contract No. | 33677 |
| Contract | SDG H4012 |

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Technetium 99 | |
|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U | |
| R906112-02 | | | 7847-002 | B20VJ2 | U | |
| R906112-03 | | | 7847-003 | B20W87 | U | |
| R906112-04 | | | 7847-004 | B20W88 | U | |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok | |
| R906112-06 | | | 7847-006 | Method Blank | U | |
| R906112-07 | | | 7847-007 | Duplicate (R906112-01) | - | U |

Nominal values and limits from method RDLs (pCi/g) 15.0

ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 13.2 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 0.441 | 1.00 | | | 82 | | 100 | | | 13 | 06/26/09 | 06/30 | GRB-223 |
| R906112-02 | | | B20VJ2 | 0.417 | 1.00 | | | 83 | | 100 | | | 13 | 06/26/09 | 06/30 | GRB-224 |
| R906112-03 | | | B20W87 | 0.436 | 1.00 | | | 81 | | 100 | | | 22 | 06/26/09 | 07/01 | GRB-202 |
| R906112-04 | | | B20W88 | 0.408 | 1.00 | | | 86 | | 100 | | | 21 | 06/26/09 | 07/01 | GRB-203 |
| R906112-05 | | | Lab Control Sample | 0.544 | 1.00 | | | 71 | | 100 | | | | 06/26/09 | 06/29 | GRB-201 |
| R906112-06 | | | Method Blank | 0.428 | 1.00 | | | 80 | | 100 | | | | 06/26/09 | 06/30 | GRB-228 |
| R906112-07 | | | Duplicate (R906112-01) | 0.491 | 1.00 | | | 71 | | 100 | | | 12 | 06/26/09 | 06/29 | GRB-203 |
| Nominal values and limits from method | | | | 15.0 | 1.00 | | | 30-110 | | 50 | | | 180 | | | |

| PROCEDURES | REFERENCE | TC99_TR_SEP_GPC |
|---|---|---|
| | SPP-062 | Sample Aliquoting, rev 1 |
| | CP-021 | Preparation of Tc-99m Tracer, rev 4 |
| | CP-431 | Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2 |
| | CP-008 | Heavy Element Electroplating, rev 13 |

| AVERAGES ± 2 SD FOR 7 SAMPLES | | | | |
|---|---|---|---|---|
| MDA | 0.452 | ± | 0.097 |
| YIELD | 79 | ± | 12 |

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-LMS |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

Test GAM Matrix SOLID
SDG 7847
Contact N. Joseph Verville

## LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4012

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Cobalt 60 | Cesium 137 |
|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U | U |
| R906112-02 | | | 7847-002 | B20VJ2 | U | U |
| R906112-03 | | | 7847-003 | B20W87 | 0.741 | 153 |
| R906112-04 | | | 7847-004 | B20W88 | U | 25.4 |
| R906112-05 | | | 7847-005 | Lab Control Sample | ok | ok |
| R906112-06 | | | 7847-006 | Method Blank | U | U |
| R906112-07 | | | 7847-007 | Duplicate (R906112-01) | - U | - U |
| Nominal values and limits from method ARRA 200-CW-3 - Soil Sampling | | | | RDLs (pCi/g) | 0.050 | 0.100 |

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 7.0 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 9.02 | 187 | | | | | 410 | | | 9 | 06/25/09 | 06/26 | JR,01,00 |
| R906112-02 | | | B20VJ2 | 8.74 | 177 | | | | | 406 | | | 9 | 06/25/09 | 06/26 | JR,07,00 |
| R906112-03 | | | B20W87 | 30.3 | 145 | | | | | 409 | | | 17 | 06/25/09 | 06/26 | JR,02,00 |
| R906112-04 | | | B20W88 | 16.5 | 183 | | | | | 409 | | | 16 | 06/25/09 | 06/26 | JR,04,00 |
| R906112-05 | | | Lab Control Sample | 0.084 | 140 | | | | | 409 | | | | 06/25/09 | 06/26 | JR,06,00 |
| R906112-06 | | | Method Blank | 15.1 | 140 | | | | | 405 | | | | 06/25/09 | 06/26 | JR,08,00 |
| R906112-07 | | | Duplicate (R906112-01) | 6.23 | 187 | | | | | 886 | | | 9 | 06/25/09 | 06/26 | JR,01,00 |
| Nominal values and limits from method | | | | 0.050 | 840 | | | | | 100 | | | 180 | | | |

PROCEDURES REFERENCE GAMMA_GS
SPP-100 Preparation of Sample for Gamma Spectroscopy, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 12.3 ± 19.3
YIELD ____ ± ____

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

Test H Matrix SOLID
SDG 7847
Contact N. Joseph Verville

## LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4012

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Tritium |
|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U |
| R906112-02 | | | 7847-002 | B20VJ2 | U |
| R906112-03 | | | 7847-003 | B20W87 | U |
| R906112-04 | | | 7847-004 | B20W88 | U |
| R906112-08 | | | 7847-008 | Lab Control Sample | LOW |
| R906112-09 | | | 7847-009 | Method Blank | U |
| R906112-10 | | | 7847-010 | Duplicate (R906112-01) | - U |

Nominal values and limits from method RDLs (pCi/g) 400
ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 10.0 % | Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 6.26 | 0.254 | | | 100 | | 50 | | | 14 | 07/01/09 | 07/01 | LSC-004 |
| R906112-02 | | | B20VJ2 | 6.12 | 0.260 | | | 100 | | 50 | | | 14 | 07/01/09 | 07/01 | LSC-004 |
| R906112-03 | | | B20W87 | 6.45 | 0.247 | | | 100 | | 50 | | | 22 | 07/01/09 | 07/01 | LSC-004 |
| R906112-04 | | | B20W88 | 6.35 | 0.250 | | | 100 | | 50 | | | 21 | 07/01/09 | 07/01 | LSC-004 |
| R906112-08 | | | Lab Control Sample | 6.88 | 0.240 | | | 100 | | 50 | | | | 07/01/09 | 07/01 | LSC-004 |
| R906112-09 | | | Method Blank | 6.60 | 0.240 | | | 100 | | 50 | | | | 07/01/09 | 07/01 | LSC-004 |
| R906112-10 | | | Duplicate (R906112-01) | 6.18 | 0.257 | | | 100 | | 50 | | | 14 | 07/01/09 | 07/01 | LSC-004 |
| Nominal values and limits from method | | | | 400 | 0.200 | | | | | 25 | | | 180 | | | |

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 10

AVERAGES ± 2 SD MDA 6.41 ± 0.530
FOR 7 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

Test NI L Matrix SOLID
SDG 7847
Contact N. Joseph Verville

## LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4012

## RESULTS

| LAB SAMPLE ID | RAW TEST | SUF-FIX | PLANCHET | CLIENT SAMPLE ID | Nickel 63 |
|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | | | |
| R906112-01 | | | 7847-001 | B20VJ1 | U |
| R906112-02 | | | 7847-002 | B20VJ2 | U |
| R906112-03 | | | 7847-003 | B20W87 | 7.07 |
| R906112-04 | | | 7847-004 | B20W88 | U |
| R906112-08 | | | 7847-008 | Lab Control Sample | ok |
| R906112-09 | | | 7847-009 | Method Blank | U |
| R906112-10 | | | 7847-010 | Duplicate (R906112-01) | - U |

Nominal values and limits from method RDLs (pCi/g) 30.0
ARRA 200-CW-3 - Soil Sampling

## METHOD PERFORMANCE

| LAB SAMPLE ID | RAW TEST | SUF-FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANAL-YZED | DETECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation batch 7197-186 | | | 2σ prep error 11.2 % Reference Lab Notebook No. 7197 pg.186 | | | | | | | | | | | | | |
| R906112-01 | | | B20VJ1 | 3.24 | 0.450 | | | 92 | | 50 | | | 13 | 06/30/09 | 06/30 | LSC-007 |
| R906112-02 | | | B20VJ2 | 3.26 | 0.450 | | | 91 | | 50 | | | 13 | 06/30/09 | 06/30 | LSC-007 |
| R906112-03 | | | B20W87 | 3.42 | 0.450 | | | 87 | | 50 | | | 21 | 06/30/09 | 06/30 | LSC-007 |
| R906112-04 | | | B20W88 | 3.30 | 0.450 | | | 90 | | 50 | | | 20 | 06/30/09 | 06/30 | LSC-007 |
| R906112-08 | | | Lab Control Sample | 3.14 | 0.450 | | | 95 | | 50 | | | | 06/30/09 | 06/30 | LSC-007 |
| R906112-09 | | | Method Blank | 3.12 | 0.450 | | | 96 | | 50 | | | | 06/30/09 | 06/30 | LSC-007 |
| R906112-10 | | | Duplicate (R906112-01) | 3.28 | 0.450 | | | 91 | | 50 | | | 13 | 06/30/09 | 06/30 | LSC-007 |
| Nominal values and limits from method | | | | 30.0 | 0.450 | | | 40-110 | | 25 | | | 180 | | | |

| PROCEDURES | REFERENCE | NI63_LSC |
|---|---|---|
| | SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 1 |
| | CP-280 | Nickel-63 Purification, rev 5 |

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 3.25 ± 0.202
YIELD 92 ± 6

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG H4012

## SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

| | |
|---|---|
| SDG | 7847 |
| Contact | N. Joseph Verville |

REPORT GUIDE

| | |
|---|---|
| Client | CHPRC |
| Contract | No. 33677 |
| Case no | SDG_H4012 |

# PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-RG |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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Protocol CHPRC
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Form DVD-RG
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG H4012

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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Protocol CHPRC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG_H4012

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG H4012

## LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG H4012

# DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

| | |
|---|---|
| SDG | 7847 |
| Contact | N. Joseph Verville |

GUIDE, cont.

| | |
|---|---|
| Client | CHPRC |
| Contract | No. 33677 |
| Case no | SDG H4012 |

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

| | |
|---|---|
| Lab id | EBRLNE |
| Protocol | CHPRC |
| Version | Ver 1.0 |
| Form | DVD-RG |
| Version | 3.06 |
| Report date | 07/30/09 |

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG_H4012

## METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG H4012

## METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/30/09

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4012

SDG 7847
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG H4012

## METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

R09-017-149 PAGE 1 OF 1

| | | | |
|---|---|---|---|
| COLLECTOR: KJ Young | COMPANY CONTACT: WIDRIG, DL | TELEPHONE NO.: 376-2858 | PROJECT COORDINATOR: WIDRIG, DL |
| SAMPLING LOCATION: UPR-N-2; I-001 Test pit #1 (3') | PROJECT DESIGNATION: ARRA 200-CW-3 - Soil Sampling | | SAF NO.: R09-017 |
| ICE CHEST NO.: GWS-046 | FIELD LOGBOOK NO.: HNF-N-506-5 17 | ACTUAL SAMPLE DEPTH: 3' | COA: 301972ES10 |
| SHIPPED TO: ~~Waste Sampling & Characterization~~ EBERLINE 7872 6-24-09 | OFFSITE PROPERTY NO.: N/A 00088 H4012 (7847) | | BILL OF LADING/AIR BILL NO.: N/A 7967 2101 3220 |

PRICE CODE: 8C

AIR QUALITY: ☐

DATA TURNAROUND: ~~15~~ 7 Days / 15 Days 7 6/9/9

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL W
= WATER

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B20VH9

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

| SAMPLE NO. | LAB ID | MATRIX* | SAMPLE DATE | SAMPLE TIME | NO./TYPE CONTAINER(S) | ANALYSIS | PRESERVATION |
|---|---|---|---|---|---|---|---|
| B20VJ1 | | S | 6/17/9 | 1310 | 1X500mL Square Bottle - Poly | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | Cool~4C |
| ~~B20VJ1~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~ICP/MS - 200.8 (TAL) {Ba, Cd, Cr, Mn, Sb, Zn} ICP/MS - 200.8 (Add-on) {As, Pb} 200.8_HG - ICPMS {Hg}~~ | Cool~4C |
| ~~B20VJ1~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~Chromium Hex - 7196;~~ | Cool~4C |
| ~~B20VJ1~~ | | ~~S~~ | | | ~~1X250mL aG~~ | ~~PCBs - 8082;~~ | Cool~4C |

7872 6-24-09

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| KJ Young | JUN 17 2009 1600 | S.S.U #1 | JUN 17 2009 1600 |
| S.S.U #1 | JUN 24 2009 0700 | KC Patterson | JUN 24 2009 0700 |
| KC Patterson | JUN 24 2009 | | JUN 24 2009 |
| FED EX | | R.F. MATAWAPAN | 06/25/09 0915 |

SPECIAL INSTRUCTIONS

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Gamma Spectroscopy {Co-60, Cs-137, Eu-152, Eu-154, Eu-155} Americium-241; Isotopic Plutonium; Isotopic Uranium {U-233/234, U-235, U-238} Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Thorium {Th-232}

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

CH2MHill Plateau Remediation Company

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

R09-017-151 PAGE 1 OF 1

| | | | |
|---|---|---|---|
| COLLECTOR: KJ Young | COMPANY CONTACT: WIDRIG, DL | TELEPHONE NO.: 376-2858 | PROJECT COORDINATOR: WIDRIG, DL |
| SAMPLING LOCATION: UPR-N-2; I-001D Test pit #1 (3') | PROJECT DESIGNATION: ARRA 200-CW-3 - Soil Sampling | | SAF NO.: R09-017 |
| ICE CHEST NO.: GWS-046 | FIELD LOGBOOK NO.: HNF-N-506-5 17 | ACTUAL SAMPLE DEPTH: 3' | COA: 301972ES10 |
| SHIPPED TO: ~~Waste Sampling & Characterization~~ EBERLINE | OFFSITE PROPERTY NO.: N/A 00088 H4012 (7847) | | BILL OF LADING/AIR BILL NO.: N/A 7967 2101 3220 |

PRICE CODE: 8C

AIR QUALITY: ☐

DATA TURNAROUND: ~~15~~ 7 Days / 15 Days 6/9/9

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

MATRIX*: OL = OTHER LIQUID; OS = OTHER SOLID; S = SOIL; W = WATER

SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B20VH9

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

| SAMPLE NO. | LAB ID | MATRIX* | SAMPLE DATE | SAMPLE TIME | NO./TYPE CONTAINER(S) | ANALYSIS | PRESERVATION |
|---|---|---|---|---|---|---|---|
| B20VJ2 | | S | 6/17/9 | 1310 | 1X500mL Square Bottle - Poly | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | Cool~4C |
| ~~B20VJ2~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~ICP/MS - 200.8 (TAL) {Ba, Cd, Cr, Mn, Sb, Zn} ICP/MS - 200.8 (Add-on) {As, Pb} 200.8_HG - ICPMS {Hg}~~ | Cool~4C |
| ~~B20VJ2~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~Chromium Hex - 7196;~~ | Cool~4C |
| ~~B20VJ2~~ | | ~~S~~ | | | ~~1X250mL aG~~ | ~~PCBs - 8082;~~ | Cool~4C |

KBZ 6-24-09

**CHAIN OF POSSESSION** / **SIGN/ PRINT NAMES**

| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| KJ Young | JUN 17 2009 / 1600 | S.S.U #1 | JUN 17 2009 / 1600 |
| S.S.U #1 | JUN 24 2009 / 0700 | KC Patterson | JUN 24 2009 / 0700 |
| KC Patterson | JUN 24 2009 | | JUN 24 2009 |
| FED EX | | R.F. MATAWAN | 06/25/09 0915 |

**SPECIAL INSTRUCTIONS**

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Gamma Spectroscopy {Co-60, Cs-137, Eu-152, Eu-154, Eu-155} Americium-241; Isotopic Plutonium; Isotopic Uranium {U-233/234, U-235, U-238} Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Thorium {Th-232}

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

CH2MHill Plateau Remediation Company

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

R09-017-232 | PAGE 1 OF 1

| | | | |
|---|---|---|---|
| COLLECTOR: KJ Young | COMPANY CONTACT: CLINTON, R | TELEPHONE NO.: 372-1718 | PROJECT COORDINATOR: WIDRIG, DL |
| SAMPLING LOCATION: 216-N-6; I-013 Test pit # 1 (3') | PROJECT DESIGNATION: ARRA 200-CW-3 - Soil Sampling | | SAF NO.: R09-017 |
| ICE CHEST NO.: GWS 096 | FIELD LOGBOOK NO.: HNF-N-506-5 | ACTUAL SAMPLE DEPTH: 3' | COA: 301972ES10 |
| SHIPPED TO: ~~Waste Sampling & Characterization~~ FEDERLINE | OFFSITE PROPERTY NO.: N/A 00088 H4012 (7847) | | BILL OF LADING/AIR BILL NO.: ~~N/A~~ 7967 2101 3220 |

PRICE CODE: 8C

AIR QUALITY: ☐

DATA TURNAROUND: ~~15~~ 7 Days / 15 Days

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

MATRIX*: OL = OTHER LIQUID; OS = OTHER SOLID; S = SOIL; W = WATER

SPECIAL HANDLING AND/OR STORAGE: Radioactive Tie To: B20W75

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

| SAMPLE NO. | LAB ID | MATRIX* | SAMPLE DATE | SAMPLE TIME | NO./TYPE CONTAINER(S) | ANALYSIS | PRESERVATION |
|---|---|---|---|---|---|---|---|
| B20W87 | | S | 6/9/9 | 1030 | 1X500mL Square Bottle - Poly | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | Cool~4C |
| ~~B20W87~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~ICP/MS - 200.8 (TAL) {Ba, Cd, Cr, Mn, Sb, Zn} ICP/MS - 200.8 (Add-on) {As, Pb} 200.8_HG - ICPMS {Hg}~~ | Cool~4C |
| ~~B20W87~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~Chromium Hex - 7196;~~ | Cool~4C |
| ~~B20W87~~ | | ~~S~~ | | | ~~1X250mL aG~~ | ~~PCBs - 8082;~~ | Cool~4C |

6-24-09

**CHAIN OF POSSESSION** / **SIGN/ PRINT NAMES**

| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| KJ Young | 6/9/09 / 1600 | S.S.U #1 | 6/9/09 / 1600 |
| S.S.U #1 | JUN 24 2009 / 0710 | KC Patterson | JUN 24 2009 / 0708 |
| KC Patterson | JUN 24 2009 | | JUN 24 2009 |
| FED EX | | R.F. MATOWAYAN | 06/25/09 0975 |

**SPECIAL INSTRUCTIONS**

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Gamma Spectroscopy {Co-60, Cs-137, Eu-152, Eu-154, Eu-155} Americium-241; Isotopic Plutonium; Isotopic Uranium {U-233/234, U-235, U-238} Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Thorium {Th-232}

ORIGINAL

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | R09-017-233 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: KJ Young | COMPANY CONTACT: CLINTON, R | TELEPHONE NO.: 372-1718 | PROJECT COORDINATOR: WIDRIG, DL | PRICE CODE: 8C | DATA TURNAROUND: ~~15~~ 7 Days / 15 Days 7 6/9/9 |
| SAMPLING LOCATION: 216-N-6; I-014 Test pit #2 (4') | PROJECT DESIGNATION: ARRA 200-CW-3 - Soil Sampling | | SAF NO.: R09-017 | AIR QUALITY ☐ | |
| ICE CHEST NO.: GW5-096 | FIELD LOGBOOK NO.: HNP-N-506-5 | ACTUAL SAMPLE DEPTH: 4' | COA: 301972ES10 | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | |
| SHIPPED TO: ~~Waste Sampling & Characterization~~ EBERLINE 6-24-09 | OFFSITE PROPERTY NO.: N/A 00088 H4012 (7847) | | BILL OF LADING/AIR BILL NO.: ~~N/A~~ 7967 2101 3220 | | |

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL W
= WATER

**SPECIAL HANDLING AND/OR STORAGE**
Radioactive Tie To: B20W76

**POSSIBLE SAMPLE HAZARDS/ REMARKS**
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

| SAMPLE NO. | LAB ID | MATRIX* | SAMPLE DATE | SAMPLE TIME | NO./TYPE CONTAINER(S) | ANALYSIS | PRESERVATION |
|---|---|---|---|---|---|---|---|
| B20W88 | | S | 6/10/9 | 0830 | 1X500mL Square Bottle - Poly | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | Cool~4C |
| ~~B20W88~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~ICP/MS - 200.8 (TAL) {Ba, Cd, Cr, Mn, Sb, Zn} ICP/MS - 200.8 (Add-on) {As, Pb} 200.8_HG - ICPMS {Hg}~~ | Cool~4C |
| ~~B20W88~~ | | ~~S~~ | | | ~~1X60mL G/P~~ | ~~Chromium Hex - 7196;~~ | Cool~4C |
| ~~B20W88~~ | | ~~S~~ | | | ~~1X250mL aG~~ | ~~PCBs - 8082;~~ | Cool~4C |

6-24-09

**CHAIN OF POSSESSION** / **SIGN/ PRINT NAMES**

| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| KJ Young | 6/10/9 / 1600 | S.S.U #1 | 6/10/9 / 1600 |
| SSU-1 | JUN 24 2009 / 0700 | KC Patterson | JUN 24 2009 / 0700 |
| KC Patterson | JUN 24 2009 | | JUN 24 2009 |
| FED EX | | R.F. MATAWAHAN | 06/25/09 0915 |

**SPECIAL INSTRUCTIONS**
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Gamma Spectroscopy {Co-60, Cs-137, Eu-152, Eu-154, Eu-155} Americium-241; Isotopic Plutonium; Isotopic Uranium {U-233/234, U-235, U-238} Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Thorium {Th-232}

ORIGINAL

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

EBERLINE SERVICES

# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

JK 6/25/09

Client: CHPRC City RICHLAND State WA

Date/Time received 06/25/09 0915 CoC No. 1009-017-149, 151, 232, 233

Container I.D. No. GWS-096 Requested TAT (Days) 7 P.O. Received Yes [ ] No [X]

### INSPECTION

1. Custody seals on shipping container intact? Yes [X] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [X]
6. Number of samples in shipping container: 4 Sample Matrix S
7. Number of containers per sample: 1 (Or see CoC _____ )
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH _____ Preservative _____
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by [signature] Date: 06/25/09 Time: 1015

| Customer Sample No. | Beta/Gamma cpm | Ion Chamber mR/hr | Wipe | Customer Sample No. | Beta/Gamma cpm | Ion Chamber mR/hr | wipe |
|---|---|---|---|---|---|---|---|
| All Samples | <60 | | | | | | |
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Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 150482 Calibration date 10 June 08

Form SCP-02, 07-30-07

"over 55 years of quality nuclear services"