

SAF-RC-110
100-H Burial Grounds Remaining Sites –
Soil Quick Turn
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Randy Coffman L6-06

KW 9/30/08
INITIAL/DATE

Kathy Wendt H4-21

KW 9/30/08
INITIAL/DATE

COMMENTS:

SDG K1325

SAF-RC-110

RECEIVED
OCT 08 2008
EDMC

Rad only

Chem only

Rad & Chem

Complete

Partial

Waste Site: 118-H-5



EBERLINE ANALYTICAL CORPORATION
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Richmond, California 94804-3849
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Toll Free (800) 841-5487
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September 25, 2008

Ms. Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99352



Reference: **P.O. #S00W235A00**
Eberline Services R8-09-083-7889, SDG K1325

Dear Ms. Kessner:

Enclosed is the data report for one solid (soil) sample designated under SAF No. RC-110 received at Eberline Services on September 10, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/jag

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1325 was composed of one solid (soil) sample designated under SAF No. RC-110 with a Project Designation of: 100-H Burial Grounds Remaining Sites-Soil Quick Turn.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on September 25, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

The C-14 QC LCS recovery was 72%, less than the lower control limit of 80%; no other problems were encountered during the course of the analyses.

2.3 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analysis

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy

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."



Melissa C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1325

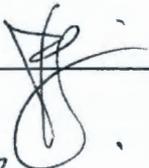
SDG 7889
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG_K1325

S U M M A R Y D A T A S E C T I O N

| T A B L E O F C O N T E N T S | | | | |
|-----------------------------------|---|---|---|----|
| About this section | . | . | . | 1 |
| Sample Summaries | . | . | . | 3 |
| Prep Batch Summary | . | . | . | 5 |
| Work Summary | . | . | . | 6 |
| Method Blanks | . | . | . | 8 |
| Lab Control Samples | . | . | . | 10 |
| Duplicates | . | . | . | 11 |
| Data Sheets | . | . | . | 13 |
| Method Summaries | . | . | . | 14 |
| Report Guides | . | . | . | 23 |
| End of Section | . | . | . | 37 |

Prepared by


Melissa Mannion

Reviewed by

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1325

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.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1325

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.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 2

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889

Contact Melissa C. Mannion

Client Hanford

Contract No. S00W235A00

Case no SDG K1325

LAB SAMPLE SUMMARY

| LAB | CLIENT SAMPLE ID | LOCATION | MATRIX | LEVEL | SAF NO | CHAIN OF CUSTODY | COLLECTED |
|------------|------------------------|----------|--------|-------|--------|------------------|----------------|
| R809083-01 | J17HH8 | 118-H-5 | SOLID | | RC-110 | RC-110-002 | 09/04/08 08:35 |
| R809083-02 | Lab Control Sample | | SOLID | | RC-110 | | |
| R809083-03 | Method Blank | | SOLID | | RC-110 | | |
| R809083-04 | Duplicate (R809083-01) | 118-H-5 | SOLID | | RC-110 | | 09/04/08 08:35 |

LAB SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1325

| C BATCH | CHAIN OF CUSTODY | CLIENT SAMPLE ID | MATRIX | % SOLIDS | SAMPLE AMOUNT | BASIS AMOUNT | DAYS SINCE RECEIVED | LAB COLL SAMPLE ID | DEPARTMENT SAMPLE ID |
|---------|------------------|------------------------|--------|----------|---------------|--------------|---------------------|--------------------|----------------------|
| 889 | RC-110-002 | J17HH8 | SOLID | 99.5 | 1373 g | | 09/10/08 6 | R809083-01 | 7889-001 |
| | | Method Blank | SOLID | | | | | R809083-03 | 7889-003 |
| | | Lab Control Sample | SOLID | | | | | R809083-02 | 7889-002 |
| | | Duplicate (R809083-01) | SOLID | 99.5 | 1373 g | | 09/10/08 6 | R809083-04 | 7889-004 |

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1325

| TEST | MATRIX | METHOD | PREPARATION ERROR | | PLANCHETS ANALYZED | | | QUALI- FIERS | |
|--------------------------------------|--------|-------------------------------|-------------------|------|--------------------|------|----------|-----------------|-----|
| | | | BATCH | 2σ % | CLIENT | MORE | RE BLANK | | LCS |
| Alpha Spectroscopy | | | | | | | | | |
| NP | SOLID | Neptunium in Solids | 6160-152 | 14.8 | 1 | | 1 | 1 | 1/1 |
| PU | SOLID | Plutonium, Isotopic in Solids | 6160-152 | 8.0 | 1 | | 1 | 1 | 1/1 |
| U | SOLID | Uranium, Isotopic in Solids | 6160-152 | 8.0 | 1 | | 1 | 1 | 1/1 |
| Beta Counting | | | | | | | | | |
| SR | SOLID | Total Strontium in Solids | 6160-152 | 10.4 | 1 | | 1 | 1 | 1/1 |
| Gas Proportional Counting | | | | | | | | | |
| 93A | SOLID | Gross Alpha in Solids | 6160-152 | 20.6 | 1 | | 1 | 1 | 1/1 |
| 93B | SOLID | Gross Beta in Solids | 6160-152 | 11.0 | 1 | | 1 | 1 | 1/1 |
| Gamma Spectroscopy | | | | | | | | | |
| GAM | SOLID | Gamma Scan | 6160-152 | 7.0 | 1 | | 1 | 1 | 1/1 |
| Liquid Scintillation Counting | | | | | | | | | |
| C | SOLID | Carbon 14 in Solids | 6160-152 | 10.0 | 1 | | 1 | 1 | 1/1 |
| NI_L | SOLID | Nickel 63 in Solids | 6160-152 | 11.2 | 1 | | 1 | 1 | 1/1 |

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-PBS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889

Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford

Contract No. S00W235A00

Case no SDG K1325

| AB SAMPLE | CLIENT SAMPLE ID | | | | SUF- | | | | | |
|-----------|------------------------|--------|----------|--------|------|----------|----------|----|-------------------------------|--|
| COLLECTED | LOCATION | MATRIX | | | FIX | ANALYZED | REVIEWED | BY | METHOD | |
| RECEIVED | CUSTODY | SAF No | PLANCHET | TEST | | | | | | |
| 809083-01 | J17HH8 | | 7889-001 | 93A/93 | | 09/23/08 | 09/24/08 | BW | Gross Alpha in Solids | |
| 09/04/08 | 118-H-5 | SOLID | 7889-001 | 93B/93 | | 09/23/08 | 09/24/08 | BW | Gross Beta in Solids | |
| 09/10/08 | RC-110-002 | RC-110 | 7889-001 | C | | 09/15/08 | 09/18/08 | BW | Carbon 14 in Solids | |
| | | | 7889-001 | GAM | | 09/17/08 | 09/22/08 | BW | Gamma Scan | |
| | | | 7889-001 | NI_L | | 09/19/08 | 09/23/08 | BW | Nickel 63 in Solids | |
| | | | 7889-001 | NP | | 09/20/08 | 09/23/08 | BW | Neptunium in Solids | |
| | | | 7889-001 | PU | | 09/20/08 | 09/22/08 | BW | Plutonium, Isotopic in Solids | |
| | | | 7889-001 | SR | | 09/19/08 | 09/23/08 | BW | Total Strontium in Solids | |
| | | | 7889-001 | U | | 09/19/08 | 09/22/08 | BW | Uranium, Isotopic in Solids | |
| 309083-02 | Lab Control Sample | | 7889-002 | 93A/93 | | 09/23/08 | 09/24/08 | BW | Gross Alpha in Solids | |
| | | SOLID | 7889-002 | 93B/93 | | 09/23/08 | 09/24/08 | BW | Gross Beta in Solids | |
| | | RC-110 | 7889-002 | C | | 09/16/08 | 09/18/08 | BW | Carbon 14 in Solids | |
| | | | 7889-002 | GAM | | 09/17/08 | 09/22/08 | BW | Gamma Scan | |
| | | | 7889-002 | NI_L | | 09/19/08 | 09/23/08 | BW | Nickel 63 in Solids | |
| | | | 7889-002 | NP | | 09/20/08 | 09/23/08 | BW | Neptunium in Solids | |
| | | | 7889-002 | PU | | 09/19/08 | 09/22/08 | BW | Plutonium, Isotopic in Solids | |
| | | | 7889-002 | SR | | 09/19/08 | 09/23/08 | BW | Total Strontium in Solids | |
| | | | 7889-002 | U | | 09/20/08 | 09/22/08 | BW | Uranium, Isotopic in Solids | |
| 309083-03 | Method Blank | | 7889-003 | 93A/93 | | 09/23/08 | 09/24/08 | BW | Gross Alpha in Solids | |
| | | SOLID | 7889-003 | 93B/93 | | 09/23/08 | 09/24/08 | BW | Gross Beta in Solids | |
| | | RC-110 | 7889-003 | C | | 09/15/08 | 09/18/08 | BW | Carbon 14 in Solids | |
| | | | 7889-003 | GAM | | 09/17/08 | 09/22/08 | BW | Gamma Scan | |
| | | | 7889-003 | NI_L | | 09/19/08 | 09/23/08 | BW | Nickel 63 in Solids | |
| | | | 7889-003 | NP | | 09/20/08 | 09/23/08 | BW | Neptunium in Solids | |
| | | | 7889-003 | PU | | 09/20/08 | 09/22/08 | BW | Plutonium, Isotopic in Solids | |
| | | | 7889-003 | SR | | 09/19/08 | 09/23/08 | BW | Total Strontium in Solids | |
| | | | 7889-003 | U | | 09/20/08 | 09/22/08 | BW | Uranium, Isotopic in Solids | |
| 309083-04 | Duplicate (R809083-01) | | 7889-004 | 93A/93 | | 09/23/08 | 09/24/08 | BW | Gross Alpha in Solids | |
| 09/04/08 | 118-H-5 | SOLID | 7889-004 | 93B/93 | | 09/23/08 | 09/24/08 | BW | Gross Beta in Solids | |
| 09/10/08 | | RC-110 | 7889-004 | C | | 09/15/08 | 09/18/08 | BW | Carbon 14 in Solids | |
| | | | 7889-004 | GAM | | 09/18/08 | 09/22/08 | BW | Gamma Scan | |
| | | | 7889-004 | NI_L | | 09/19/08 | 09/23/08 | BW | Nickel 63 in Solids | |
| | | | 7889-004 | NP | | 09/20/08 | 09/23/08 | BW | Neptunium in Solids | |
| | | | 7889-004 | PU | | 09/20/08 | 09/22/08 | BW | Plutonium, Isotopic in Solids | |
| | | | 7889-004 | SR | | 09/19/08 | 09/23/08 | BW | Total Strontium in Solids | |
| | | | 7889-004 | U | | 09/20/08 | 09/22/08 | BW | Uranium, Isotopic in Solids | |

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LWS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. S00W235A00

Case no SDG K1325

COUNTS OF TESTS BY SAMPLE TYPE

| TEST | SAF No | METHOD | REFERENCE | CLIENT | MORE | RE | BLANK | LCS | DUP SPIKE | TOTAL |
|---------------|--------|-------------------------------|----------------------|----------|------|----|----------|----------|-----------|-----------|
| 93A/93 | RC-110 | Gross Alpha in Solids | 900.0_ALPHABETA_GPC | 1 | | | 1 | 1 | 1 | 4 |
| 93B/93 | RC-110 | Gross Beta in Solids | 900.0_ALPHABETA_GPC | 1 | | | 1 | 1 | 1 | 4 |
| C | RC-110 | Carbon 14 in Solids | C14_COX_LSC | 1 | | | 1 | 1 | 1 | 4 |
| GAM | RC-110 | Gamma Scan | GAMMA_GS | 1 | | | 1 | 1 | 1 | 4 |
| NI_L | RC-110 | Nickel 63 in Solids | NI63_LSC | 1 | | | 1 | 1 | 1 | 4 |
| NP | RC-110 | Neptunium in Solids | NP237_LLE_PLATE_AEA | 1 | | | 1 | 1 | 1 | 4 |
| PU | RC-110 | Plutonium, Isotopic in Solids | PUISO_PLATE_AEA | 1 | | | 1 | 1 | 1 | 4 |
| SR | RC-110 | Total Strontium in Solids | SRTOT_SEP_PRECIP_GPC | 1 | | | 1 | 1 | 1 | 4 |
| U | RC-110 | Uranium, Isotopic in Solids | UIISO_PLATE_AEA | 1 | | | 1 | 1 | 1 | 4 |
| TOTALS | | | | 9 | | | 9 | 9 | 9 | 36 |

WORK SUMMARY

Page 2

SUMMARY DATA SECTION

Page 7

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LWS

Version 3.06

Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

7889-003

Method Blank

METHOD BLANK

| | | |
|-----------------------------------|--------------------------------------|------------------|
| SDG <u>7889</u> | Client/Case no <u>Hanford</u> | SDG <u>K1325</u> |
| Contact <u>Melissa C. Mannion</u> | Contract No. <u>S00W235A00</u> | |
| Lab sample id <u>R809083-03</u> | Client sample id <u>Method Blank</u> | |
| Dept sample id <u>7889-003</u> | Material/Matrix <u>SOLID</u> | |
| | SAF No <u>RC-110</u> | |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI- FIERS | TEST |
|-------------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | -1.35 | 3.0 | 7.32 | 10.0 | U | 93A |
| Gross Beta | 12587-47-2 | 0.467 | 4.1 | 7.01 | 15.0 | U | 93B |
| Carbon 14 | 14762-75-5 | 0.092 | 2.8 | 4.70 | 50.0 | U | C |
| Nickel 63 | 13981-37-8 | 0.254 | 1.7 | 2.96 | 30.0 | U | NI_L |
| Total Strontium | SR-RAD | 0.031 | 0.13 | 0.244 | 1.00 | U | SR |
| Neptunium 237 | 13994-20-2 | 0 | 0.11 | 0.167 | 1.00 | U | NP |
| Uranium 233/234 | U-233/234 | 0 | 0.045 | 0.172 | 1.00 | U | U |
| Uranium 235 | 15117-96-1 | 0.027 | 0.054 | 0.208 | 1.00 | U | U |
| Uranium 238 | U-238 | 0.022 | 0.045 | 0.172 | 1.00 | U | U |
| Plutonium 238 | 13981-16-3 | 0.051 | 0.15 | 0.281 | 1.00 | U | PU |
| Plutonium 239/240 | PU-239/240 | 0.025 | 0.051 | 0.194 | 1.00 | U | PU |
| Potassium 40 | 13966-00-2 | U | | 0.367 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.016 | 0.050 | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.036 | 0.100 | U | GAM |
| Radium 226 | 13982-63-3 | U | | 0.031 | 0.100 | U | GAM |
| Radium 228 | 15262-20-1 | U | | 0.063 | 0.200 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.041 | 0.100 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.044 | 0.100 | U | GAM |
| Europium 155 | 14391-16-3 | U | | 0.038 | 0.100 | U | GAM |
| Thorium 228 | 14274-82-9 | U | | 0.022 | | U | GAM |
| Thorium 232 | TH-232 | U | | 0.063 | | U | GAM |
| Uranium 235 | 15117-96-1 | U | | 0.065 | | U | GAM |
| Uranium 238 | U-238 | U | | 1.51 | | U | GAM |
| Americium 241 | 14596-10-2 | U | | 0.088 | | U | GAM |
| Silver 108m | 14391-65-2 | U | | 0.011 | | U | GAM |
| Barium 133 | 13981-41-4 | U | | 0.016 | | U | GAM |

100H Burial Grnds Remain Sites-SQT

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 8

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford1</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>3.06</u> |
| Report date <u>09/25/08</u> |

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1325

7889-003

Method Blank

BLANK, cont.

| | | |
|-----------------------------------|--------------------------------------|------------------|
| SDG <u>7889</u> | Client/Case no <u>Hanford</u> | <u>SDG_K1325</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>No. S00W235A00</u> | |
| Lab sample id <u>R809083-03</u> | Client sample id <u>Method Blank</u> | |
| Dept sample id <u>7889-003</u> | Material/Matrix _____ | <u>SOLID</u> |
| | SAF No <u>RC-110</u> | |

| |
|-----------------|
| QC-BLANK #67295 |
|-----------------|

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford1</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>3.06</u> |
| Report date <u>09/25/08</u> |

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

7889-002

Lab Control Sample

LAB CONTROL SAMPLE

| | |
|---|--|
| SDG <u>7889</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R809083-02</u> Dept sample id <u>7889-002</u> | Client/Case no <u>Hanford</u> SDG <u>K1325</u> Contract No. <u>S00W235A00</u> Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>RC-110</u> |
|---|--|

| 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 |
|-------------------|-----------------|-------------------|--------------|--------------|----------------------|----------------|-----------------|-----------|--------------------|--------------------|
| Gross Alpha | 99.5 | 16 | 6.70 | 10.0 | 93A | 102 | 4.1 | 98 | 61-139 | 70-130 |
| Gross Beta | 88.0 | 7.1 | 5.62 | 15.0 | 93B | 92.6 | 3.7 | 95 | 80-120 | 80-120 |
| Carbon 14 | 1530 | 12 | 3.38 | 50.0 | C | 2130 | 85 | <u>72</u> | 88-112 | 80-120 |
| Nickel 63 | 213 | 5.9 | 3.05 | 30.0 | NI_L | 220 | 8.8 | 97 | 82-118 | 80-120 |
| Total Strontium | 10.0 | 0.55 | 0.224 | 1.00 | SR | 9.26 | 0.37 | 108 | 80-120 | 80-120 |
| Neptunium 237 | 16.2 | 1.7 | 0.120 | 1.00 | NP | 19.8 | 0.79 | 82 | 77-123 | 80-120 |
| Uranium 233/234 | 16.4 | 1.4 | 0.622 | 1.00 | U | 18.6 | 0.74 | 88 | 83-117 | 80-120 |
| Uranium 235 | 13.8 | 1.2 | 0.116 | 1.00 | U | 15.1 | 0.60 | 91 | 83-117 | 80-120 |
| Uranium 238 | 16.9 | 1.4 | 0.592 | 1.00 | U | 20.2 | 0.81 | 84 | 84-116 | 80-120 |
| Plutonium 238 | 23.1 | 0.79 | 0.069 | 1.00 | PU | 23.4 | 0.94 | 99 | 86-114 | 80-120 |
| Plutonium 239/240 | 25.6 | 0.86 | 0.035 | 1.00 | PU | 26.4 | 1.1 | 97 | 86-114 | 80-120 |
| Cobalt 60 | 0.570 | 0.044 | 0.022 | 0.050 | GAM | 0.594 | 0.024 | 96 | 84-116 | 80-120 |
| Cesium 137 | 0.683 | 0.040 | 0.025 | 0.100 | GAM | 0.664 | 0.027 | 103 | 85-115 | 80-120 |

100H Burial Grnds Remain Sites-SQT

QC-LCS #67294

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

7889-004

J17HH8

DUPLICATE

SDG 7889

Contact Melissa C. Mannion

DUPLICATE

Lab sample id R809083-04

Dept sample id 7889-004

% solids 99.5

ORIGINAL

Lab sample id R809083-01

Dept sample id 7889-001

Received 09/10/08

% solids 99.5

Client/Case no Hanford SDG K1325

Contract No. S00W235A00

Client sample id J17HH8

Location/Matrix 118-H-5 **SOLID**

Collected/Weight 09/04/08 08:35 1373 g

Custody/SAF No RC-110-002 RC-110

| ANALYTE | DUPLICATE | 2σ ERR | MDA | RDL | QUALI- | ORIGINAL | 2σ ERR | MDA | QUALI- | RPD | 3σ | DER |
|-------------------|-----------|-------------|--------------|-------|------------|----------|--------|--------------|--------|-------|-----|-----|
| | pCi/g | (COUNT) | pCi/g | pCi/g | FIERS TEST | | pCi/g | (COUNT) | pCi/g | FIERS | % | TOT |
| Gross Alpha | 33.5 | 10 | 6.07 | 10.0 | 93A | 37.7 | 11 | 8.27 | | 12 | 76 | 0.5 |
| Gross Beta | 314 | 12 | 5.03 | 15.0 | 93B | 313 | 14 | 10.5 | | 0 | 25 | 0 |
| Carbon 14 | 13.9 | 2.5 | 3.51 | 50.0 | C | 16.6 | 2.6 | 3.59 | | 18 | 41 | 1.3 |
| Nickel 63 | 128 | 4.9 | 3.28 | 30.0 | NI_L | 129 | 5.0 | 3.32 | | 1 | 25 | 0.1 |
| Total Strontium | 73.2 | 1.6 | 0.281 | 1.00 | SR | 70.3 | 1.4 | 0.210 | | 4 | 23 | 0.5 |
| Neptunium 237 | 0.110 | <u>0.15</u> | 0.110 | 1.00 | NP | 0 | 0.047 | 0.181 | U | 200 | 431 | 1.4 |
| Uranium 233/234 | 0.336 | 0.18 | 0.171 | 1.00 | U | 0.543 | 0.080 | 0.027 | | 47 | 69 | 2.0 |
| Uranium 235 | 0.027 | 0.054 | 0.208 | 1.00 | U | 0.031 | 0.020 | 0.026 | | 14 | 298 | 0.1 |
| Uranium 238 | 0.605 | 0.23 | 0.171 | 1.00 | U | 0.487 | 0.074 | 0.021 | | 22 | 69 | 0.9 |
| Plutonium 238 | 0.585 | 0.35 | 0.330 | 1.00 | PU | 0.362 | 0.17 | 0.202 | | 47 | 124 | 1.1 |
| Plutonium 239/240 | 14.4 | 1.9 | 0.263 | 1.00 | PU | 13.2 | 1.2 | 0.126 | | 9 | 30 | 0.9 |
| Potassium 40 | 12.7 | 0.79 | 0.326 | | GAM | 11.8 | 0.86 | 0.353 | | 7 | 21 | 1.1 |
| Cobalt 60 | 2.00 | 0.077 | <u>0.052</u> | 0.050 | GAM | 2.09 | 0.085 | <u>0.056</u> | | 4 | 17 | 0.8 |
| Cesium 137 | 140 | 0.40 | <u>0.128</u> | 0.100 | GAM | 153 | 0.50 | <u>0.173</u> | | 9 | 15 | 1.8 |
| Radium 226 | 0.593 | 0.16 | <u>0.203</u> | 0.100 | GAM | 0.326 | 0.17 | <u>0.220</u> | | 58 | 78 | 2.2 |
| Radium 228 | 0.576 | 0.23 | <u>0.278</u> | 0.200 | GAM | 0.570 | 0.35 | <u>0.379</u> | | 1 | 111 | 0 |
| Europium 152 | 18.4 | 0.45 | <u>0.498</u> | 0.100 | GAM | 20.1 | 0.50 | <u>0.564</u> | | 9 | 16 | 1.7 |
| Europium 154 | 1.90 | 0.16 | <u>0.159</u> | 0.100 | GAM | 1.82 | 0.22 | <u>0.217</u> | | 4 | 26 | 0.5 |
| Europium 155 | U | | <u>0.341</u> | 0.100 | U | GAM | U | <u>0.324</u> | U | - | | 0.1 |
| Thorium 228 | 0.500 | 0.098 | 0.154 | | GAM | 0.490 | 0.14 | 0.210 | | 2 | 54 | 0.1 |
| Thorium 232 | 0.576 | 0.23 | 0.278 | | GAM | 0.570 | 0.35 | 0.379 | | 1 | 111 | 0 |
| Uranium 235 | U | | 0.418 | | U | GAM | U | 0.576 | U | - | | 0.4 |
| Uranium 238 | U | | 10.0 | | U | GAM | U | 12.4 | U | - | | 0.3 |
| Americium 241 | 3.61 | 0.41 | 0.547 | | GAM | 3.76 | 0.16 | 0.203 | | 4 | 23 | 0.5 |
| Silver 108m | U | | 0.145 | | U | GAM | U | 0.181 | U | - | | 0.3 |
| Barium 133 | U | | 0.154 | | U | GAM | U | 0.200 | U | - | | 0.4 |

100H Burial Grnds Remain Sites-SQT

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 11

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford1</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DUP</u> |
| Version <u>3.06</u> |
| Report date <u>09/25/08</u> |

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

7889-004

J17HH8

DUPLICATE, cont.

| | | | |
|-----------------------------------|---------------------------------|--|------------------|
| SDG <u>7889</u> | | Client/Case no <u>Hanford</u> | <u>SDG K1325</u> |
| Contact <u>Melissa C. Mannion</u> | | Contract No. <u>S00W235A00</u> | |
| <u>DUPLICATE</u> | <u>ORIGINAL</u> | | |
| Lab sample id <u>R809083-04</u> | Lab sample id <u>R809083-01</u> | Client sample id <u>J17HH8</u> | |
| Dept sample id <u>7889-004</u> | Dept sample id <u>7889-001</u> | Location/Matrix <u>118-H-5</u> | <u>SOLID</u> |
| | Received <u>09/10/08</u> | Collected/Weight <u>09/04/08 08:35</u> | <u>1373 g</u> |
| % solids <u>99.5</u> | % solids <u>99.5</u> | Custody/SAF No <u>RC-110-002</u> | <u>RC-110</u> |

QC-DUP#1 67296

DUPLICATES

Page 2

SUMMARY DATA SECTION

Page 12

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford1</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DUP</u> |
| Version <u>3.06</u> |
| Report date <u>09/25/08</u> |

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1325

7889-001

J17HH8

DATA SHEET

| | | |
|-----------------------------------|--|------------------|
| SDG <u>7889</u> | Client/Case no <u>Hanford</u> | SDG <u>K1325</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>No. S00W235A00</u> | |
| Lab sample id <u>R809083-01</u> | Client sample id <u>J17HH8</u> | |
| Dept sample id <u>7889-001</u> | Location/Matrix <u>118-H-5</u> | <u>SOLID</u> |
| Received <u>09/10/08</u> | Collected/Weight <u>09/04/08 08:35</u> | <u>1373 g</u> |
| % solids <u>99.5</u> | Custody/SAF No <u>RC-110-002</u> | <u>RC-110</u> |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI- FIERS | TEST |
|-------------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | 37.7 | 11 | 8.27 | 10.0 | | 93A |
| Gross Beta | 12587-47-2 | 313 | 14 | 10.5 | 15.0 | | 93B |
| Carbon 14 | 14762-75-5 | 16.6 | 2.6 | 3.59 | 50.0 | | C |
| Nickel 63 | 13981-37-8 | 129 | 5.0 | 3.32 | 30.0 | | NI_L |
| Total Strontium | SR-RAD | 70.3 | 1.4 | 0.210 | 1.00 | | SR |
| Neptunium 237 | 13994-20-2 | 0 | 0.047 | 0.181 | 1.00 | U | NP |
| Uranium 233/234 | U-233/234 | 0.543 | 0.080 | 0.027 | 1.00 | | U |
| Uranium 235 | 15117-96-1 | 0.031 | 0.020 | 0.026 | 1.00 | | U |
| Uranium 238 | U-238 | 0.487 | 0.074 | 0.021 | 1.00 | | U |
| Plutonium 238 | 13981-16-3 | 0.362 | 0.17 | 0.202 | 1.00 | | PU |
| Plutonium 239/240 | PU-239/240 | 13.2 | 1.2 | 0.126 | 1.00 | | PU |
| Potassium 40 | 13966-00-2 | 11.8 | 0.86 | 0.353 | | | GAM |
| Cobalt 60 | 10198-40-0 | 2.09 | 0.085 | <u>0.056</u> | 0.050 | | GAM |
| Cesium 137 | 10045-97-3 | 153 | 0.50 | <u>0.173</u> | 0.100 | | GAM |
| Radium 226 | 13982-63-3 | 0.326 | 0.17 | <u>0.220</u> | 0.100 | | GAM |
| Radium 228 | 15262-20-1 | 0.570 | 0.35 | <u>0.379</u> | 0.200 | | GAM |
| Europium 152 | 14683-23-9 | 20.1 | 0.50 | <u>0.564</u> | 0.100 | | GAM |
| Europium 154 | 15585-10-1 | 1.82 | 0.22 | <u>0.217</u> | 0.100 | | GAM |
| Europium 155 | 14391-16-3 | U | | <u>0.324</u> | 0.100 | U | GAM |
| Thorium 228 | 14274-82-9 | 0.490 | 0.14 | 0.210 | | | GAM |
| Thorium 232 | TH-232 | 0.570 | 0.35 | 0.379 | | | GAM |
| Uranium 235 | 15117-96-1 | U | | 0.576 | | U | GAM |
| Uranium 238 | U-238 | U | | 12.4 | | U | GAM |
| Americium 241 | 14596-10-2 | 3.76 | 0.16 | 0.203 | | | GAM |
| Silver 108m | 14391-65-2 | U | | 0.181 | | U | GAM |
| Barium 133 | 13981-41-4 | U | | 0.200 | | U | GAM |

100H Burial Grnds Remain Sites-SQT

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 13

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford1</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>3.06</u> |
| Report date <u>09/25/08</u> |

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Client Hanford

Contract No. S00W235A00

Contract SDG K1325

LAB METHOD SUMMARY

NEPTUNIUM IN SOLIDS

ALPHA SPECTROSCOPY

Test NP Matrix SOLID

SDG 7889

Contact Melissa C. Mannion

RESULTS

| | | | | |
|------------------|-----------------|-----------------|-------------------------|------------------|
| AB | RAW | SUF- | | Neptunium |
| SAMPLE ID | TEST FIX | PLANCHET | CLIENT SAMPLE ID | 237 |

reparation batch 6160-152

| | | | | |
|-----------|----------|------------------------|--|----|
| 809083-01 | 7889-001 | J17HH8 | | U |
| 809083-02 | 7889-002 | Lab Control Sample | | ok |
| 809083-03 | 7889-003 | Method Blank | | U |
| 809083-04 | 7889-004 | Duplicate (R809083-01) | | ok |

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

DOH Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

| | | | | | | | | | | | | | | | |
|------------------|-----------------|-------------------------|--------------|-------------|-------------|--------------|--------------|------------|--------------|-------------|--------------|-------------|-----------------|-------------|-----------------|
| AB | RAW | SUF- | MDA | ALIQ | PREP | DILU- | YIELD | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- | | |
| SAMPLE ID | TEST FIX | CLIENT SAMPLE ID | pCi/g | g | FAC | TION | % | % | min | keV | KeV | HELD | PREPARED | YZED | DETECTOR |

reparation batch 6160-152 2σ prep error 14.8 % Reference Lab Notebook #6160, pg. 152

| | | | | | | | | | | | | | | |
|-----------|------------------------|--|-------|-------|--|--|----|--|-----|--|----|----------|-------|--------|
| 809083-01 | J17HH8 | | 0.181 | 0.500 | | | 59 | | 174 | | 16 | 09/18/08 | 09/20 | SS-052 |
| 809083-02 | Lab Control Sample | | 0.120 | 0.500 | | | 34 | | 174 | | | 09/18/08 | 09/20 | SS-053 |
| 809083-03 | Method Blank | | 0.167 | 0.500 | | | 47 | | 108 | | | 09/18/08 | 09/20 | SS-034 |
| 809083-04 | Duplicate (R809083-01) | | 0.110 | 0.500 | | | 57 | | 107 | | 16 | 09/18/08 | 09/20 | SS-035 |

Minimal values and limits from method 1.00 0.500 20-105 100 180

| | | |
|-------------------|---|----------------------------|
| PROCEDURES | REFERENCE | NP237_LLE_PLATE_AEA |
| SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 5 | |
| CP-930 | Neptunium from Solids and Water by Extraction Chromatography, rev 1 | |
| CP-008 | Heavy Element Electroplating, rev 12 | |

| | |
|------------------------|--|
| AVERAGES ± 2 SD | MDA <u>0.144</u> ± <u>0.070</u> |
| FOR 4 SAMPLES | YIELD <u>49</u> ± <u>23</u> |

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 14

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford1</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-LMS</u> |
| Version <u>3.06</u> |
| Report date <u>09/25/08</u> |

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Test PU Matrix SOLID
 SDG 7889
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1325

RESULTS

| AB | RAW | SUF- | | Plutonium | Plutonium |
|---|----------|----------|------------------------|-----------|-----------|
| SAMPLE ID | TEST FIX | PLANCHET | CLIENT SAMPLE ID | 238 | 239/240 |
| reparation batch 6160-152 | | | | | |
| 809083-01 | | 7889-001 | J17HH8 | 0.362 | 13.2 |
| 809083-02 | | 7889-002 | Lab Control Sample | ok | ok |
| 809083-03 | | 7889-003 | Method Blank | U | U |
| 809083-04 | | 7889-004 | Duplicate (R809083-01) | ok | ok |
| ominal values and limits from method RDLs (pCi/g) 1.00 1.00 | | | | | |
| DOH Burial Grnds Remain Sites-SQT | | | | | |

METHOD PERFORMANCE

| AB | RAW | SUF- | | MAX MDA | ALIQU | PREP | DILU- | YIELD | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- | | |
|---|----------|------------------------|-----------|---------|-------|------|-------|-------|-----|-------|------|-------|------|----------|-------|----------|
| SAMPLE ID | TEST FIX | CLIENT | SAMPLE ID | pCi/g | g | FAC | TION | % | % | min | keV | KeV | HELD | PREPARED | YZED | DETECTOR |
| reparation batch 6160-152 2σ prep error 8.0 % Reference Lab Notebook #6160, pg. 152 | | | | | | | | | | | | | | | | |
| 809083-01 | | J17HH8 | | 0.202 | 0.500 | | | 72 | | 187 | | | 16 | 09/19/08 | 09/20 | SS-062 |
| 809083-02 | | Lab Control Sample | | 0.069 | 0.500 | | | 82 | | 885 | | | | 09/19/08 | 09/19 | SS-065 |
| 809083-03 | | Method Blank | | 0.281 | 0.500 | | | 82 | | 106 | | | | 09/19/08 | 09/20 | SS-027 |
| 809083-04 | | Duplicate (R809083-01) | | 0.330 | 0.500 | | | 70 | | 106 | | | 16 | 09/19/08 | 09/20 | SS-028 |
| ominal values and limits from method 1.00 0.500 20-105 100 100 180 | | | | | | | | | | | | | | | | |

PROCEDURES REFERENCE PUIISO_PLATE_AEA
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
 CP-941 Plutonium in Water and Dissolved Samples by
 Extraction Chromatography, rev 3
 CP-008 Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD MDA 0.220 ± 0.228
 FOR 4 SAMPLES YIELD 76 ± 13

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Test U Matrix SOLID
 SDG 7889
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1325

RESULTS

| SAMPLE ID | RAW TEST FIX | SUF- PLANCHET | CLIENT SAMPLE ID | 1: Uranium | 2: Uranium | 3: Uranium | RESULT RATIOS (%) | | | |
|---------------------------------------|--------------|---------------|------------------------|--------------|------------|------------|-------------------|-----|-----|-----|
| | | | | 233/234 | 235 | 238 | 1+3 | 2σ | 2+3 | 2σ |
| reparation batch 6160-152 | | | | | | | | | | |
| 309083-01 | | 7889-001 | J17HH8 | 0.543 | 0.031 | 0.487 | 112 | 24 | 6 | 4 |
| 309083-02 | | 7889-002 | Lab Control Sample | ok | ok | ok | | | | |
| 309083-03 | | 7889-003 | Method Blank | U | U | U | | | | |
| 309083-04 | | 7889-004 | Duplicate (R809083-01) | ok | ok | U | ok | 56 | 36 | 4 9 |
| Nominal values and limits from method | | | | RDLs (pCi/g) | 1.00 | 1.00 | 1.00 | 100 | | 4 |
| DOH Burial Grnds Remain Sites-SQT | | | | | | | Averages | 84 | | 5 |

METHOD PERFORMANCE

| SAMPLE ID | RAW TEST FIX | SUF- CLIENT SAMPLE ID | MAX MDA | ALIQ | PREP | DILU- | YIELD | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- |
|---|--------------|------------------------|---------|-------|------|-------|--------|-----|-------|------|----------|-------|----------|
| | | | pCi/g | g | FAC | TION | % | % | min | keV | KeV | HELD | PREPARED |
| reparation batch 6160-152 2σ prep error 8.0 % Reference Lab Notebook #6160, pg. 152 | | | | | | | | | | | | | |
| 309083-01 | | J17HH8 | 0.027 | 0.500 | | | 97 | 883 | | 15 | 09/18/08 | 09/19 | SS-040 |
| 309083-02 | | Lab Control Sample | 0.622 | 0.500 | | | 100 | 191 | | | 09/18/08 | 09/20 | SS-040 |
| 309083-03 | | Method Blank | 0.208 | 0.500 | | | 91 | 107 | | | 09/18/08 | 09/20 | SS-036 |
| 309083-04 | | Duplicate (R809083-01) | 0.208 | 0.500 | | | 92 | 107 | | 16 | 09/18/08 | 09/20 | SS-037 |
| Nominal values and limits from method | | | 1.00 | 0.500 | | | 20-105 | 100 | 100 | 180 | | | |

| PROCEDURES | REFERENCE | UIISO_PLATE_AEA |
|------------|--|-----------------|
| SPP-071 | Soil Dissolution, > 1.0g Aliquot, rev 5 | |
| CP-921 | Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1 | |
| CP-008 | Heavy Element Electroplating, rev 12 | |

| | |
|-----------------|---------------------------------|
| AVERAGES ± 2 SD | MDA <u>0.266</u> ± <u>0.504</u> |
| FOR 4 SAMPLES | YIELD <u>95</u> ± <u>8</u> |

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Test SR Matrix SOLID
 SDG 7889
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1325

RESULTS

| AS | RAW | SUF- | | Total |
|---------------------------|----------|----------|------------------------|-----------|
| SAMPLE ID | TEST FIX | PLANCHET | CLIENT SAMPLE ID | Strontium |
| reparation batch 6160-152 | | | | |
| 809083-01 | | 7889-001 | J17HH8 | 70.3 |
| 809083-02 | | 7889-002 | Lab Control Sample | ok |
| 809083-03 | | 7889-003 | Method Blank | U |
| 809083-04 | | 7889-004 | Duplicate (R809083-01) | ok |

ominal values and limits from method RDLs (pCi/g) 1.00
 00H Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

| AS | RAW | SUF- | MDA | ALIQ | PREP | DILU- | YIELD | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- | | |
|---------------------------|----------|------------------------|----------------------|------|------|---------------------------------------|-------|-----|-------|------|-------|------|----------|-------|----------|
| SAMPLE ID | TEST FIX | CLIENT SAMPLE ID | pCi/g | g | FAC | TION | % | % | min | keV | KeV | HELD | PREPARED | YZED | DETECTOR |
| reparation batch 6160-152 | | | 2σ prep error 10.4 % | | | Reference Lab Notebook #6160, pg. 152 | | | | | | | | | |
| 809083-01 | | J17HH8 | 0.210 | 1.00 | | | 97 | 100 | | | | 15 | 09/19/08 | 09/19 | GRB-232 |
| 809083-02 | | Lab Control Sample | 0.224 | 1.00 | | | 94 | 100 | | | | | 09/19/08 | 09/19 | GRB-203 |
| 809083-03 | | Method Blank | 0.244 | 1.00 | | | 92 | 100 | | | | | 09/19/08 | 09/19 | GRB-225 |
| 809083-04 | | Duplicate (R809083-01) | 0.281 | 1.00 | | | 99 | 100 | | | | 15 | 09/19/08 | 09/19 | GRB-222 |

ominal values and limits from method 1.00 1.00 30-105 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
 SPP-062 Sample Aliquoting, rev 0
 CP-383 Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD MDA 0.240 ± 0.062
 FOR 4 SAMPLES YIELD 96 ± 6

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 17

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Client Hanford

Contract No. S00W235A00

Contract SDG K1325

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS

GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID

SDG 7889

Contact Melissa C. Mannion

RESULTS

| AB | RAW | SUF- | AMPLE ID | TEST FIX | PLANCHET | CLIENT SAMPLE ID | Gross Alpha |
|---------------------------|-----|------|-----------|----------|----------|------------------------|-------------|
| reparation batch 6160-152 | | | | | | | |
| | | | 809083-01 | 93 | 7889-001 | J17HH8 | 37.7 |
| | | | 809083-02 | 93 | 7889-002 | Lab Control Sample | ok |
| | | | 809083-03 | 93 | 7889-003 | Method Blank | U |
| | | | 809083-04 | 93 | 7889-004 | Duplicate (R809083-01) | ok |

nominal values and limits from method RDLs (pCi/g) 10.0
 00H Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

| AB | RAW | SUF- | AMPLE ID | TEST FIX | CLIENT SAMPLE ID | MDA pCi/g | ALIQ g | PREP FAC | DILU TION | RESID mg | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | ANAL- YZED | DETECTOR |
|--|-----|------|-----------|----------|------------------------|-----------|--------|----------|-----------|----------|-------|-----------|----------|-----------|-----------|------------|----------|
| reparation batch 6160-152 2σ prep error 20.6 % Reference Lab Notebook #6160, pg. 152 | | | | | | | | | | | | | | | | | |
| | | | 809083-01 | 93 | J17HH8 | 8.27 | 0.100 | | | 44 | 100 | | | 19 | 09/22/08 | 09/23 | GRB-115 |
| | | | 809083-02 | 93 | Lab Control Sample | 6.70 | 0.100 | | | 60 | 100 | | | | 09/22/08 | 09/23 | GRB-216 |
| | | | 809083-03 | 93 | Method Blank | 7.32 | 0.100 | | | 60 | 100 | | | | 09/22/08 | 09/23 | GRB-103 |
| | | | 809083-04 | 93 | Duplicate (R809083-01) | 6.07 | 0.100 | | | 45 | 100 | | | 19 | 09/22/08 | 09/23 | GRB-104 |

nominal values and limits from method 10.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD MDA 7.09 ± 1.88
 FOR 4 SAMPLES RESIDUE 52 ± 18

METHOD SUMMARIES

Page 5

SUMMARY DATA SECTION

Page 18

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Client Hanford

Contract No. S00W235A00

Contract SDG K1325

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS

GAS PROPORTIONAL COUNTING

Test 93B Matrix SOLID

SDG 7889

Contact Melissa C. Mannion

RESULTS

AB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Gross Beta

reparation batch 6160-152

| | | | | |
|-----------|----|----------|------------------------|-----|
| 809083-01 | 93 | 7889-001 | J17HH8 | 313 |
| 809083-02 | 93 | 7889-002 | Lab Control Sample | ok |
| 809083-03 | 93 | 7889-003 | Method Blank | U |
| 809083-04 | 93 | 7889-004 | Duplicate (R809083-01) | ok |

Minimal values and limits from method RDLs (pCi/g) 15.0
 00H Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

AB RAW SUF- MDA ALIQ PREP DILU- RESID EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION mg % min keV KeV HELD PREPARED YZED DETECTOR

reparation batch 6160-152 2σ prep error 11.0 % Reference Lab Notebook #6160, pg. 152

| | | | | | | | | | | |
|-----------|----|------------------------|------|-------|----|-----|----|----------|-------|---------|
| 309083-01 | 93 | J17HH8 | 10.5 | 0.100 | 44 | 100 | 19 | 09/22/08 | 09/23 | GRB-115 |
| 309083-02 | 93 | Lab Control Sample | 5.62 | 0.100 | 60 | 100 | | 09/22/08 | 09/23 | GRB-216 |
| 309083-03 | 93 | Method Blank | 7.01 | 0.100 | 60 | 100 | | 09/22/08 | 09/23 | GRB-103 |
| 309083-04 | 93 | Duplicate (R809083-01) | 5.03 | 0.100 | 45 | 100 | 19 | 09/22/08 | 09/23 | GRB-104 |

Minimal values and limits from method 15.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,
 rev 0

AVERAGES ± 2 SD MDA 7.04 ± 4.90
 FOR 4 SAMPLES RESIDUE 52 ± 18

METHOD SUMMARIES

Page 6

SUMMARY DATA SECTION

Page 19

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Test GAM Matrix SOLID
 SDG 7889
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1325

RESULTS

AB RAW SUP-
 AMPL ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

reparation batch 6160-152

| | | | | |
|-----------|----------|------------------------|------|-----|
| 809083-01 | 7889-001 | J17HH8 | 2.09 | 153 |
| 809083-02 | 7889-002 | Lab Control Sample | ok | ok |
| 809083-03 | 7889-003 | Method Blank | U | U |
| 809083-04 | 7889-004 | Duplicate (R809083-01) | ok | ok |

ominal values and limits from method RDLs (pCi/g) 0.050 0.100
 00H Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

AB RAW SUP- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 AMPL ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

reparation batch 6160-152 2σ prep error 7.0 % Reference Lab Notebook #6160, pg. 152

| | | | | | | | | |
|-----------|------------------------|-------------|-----|-----|----|----------|-------|----------|
| 809083-01 | J17HH8 | <u>31.7</u> | 721 | 116 | 13 | 09/13/08 | 09/17 | MB,06,00 |
| 809083-02 | Lab Control Sample | 0.022 | 700 | 117 | | 09/13/08 | 09/17 | 01,04,00 |
| 809083-03 | Method Blank | <u>3.92</u> | 700 | 117 | | 09/13/08 | 09/17 | MB,08,00 |
| 809083-04 | Duplicate (R809083-01) | <u>25.8</u> | 721 | 168 | 14 | 09/13/08 | 09/18 | 02,04,00 |

ominal values and limits from method 0.050 700 100 180

PROCEDURES REFERENCE GAMMA_GS
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
 SPP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 15.4 ± 31.5
 FOR 4 SAMPLES YIELD _____ ± _____

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1325

Test C Matrix SOLID
 SDG 7889
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS
 LIQUID SCINTILLATION COUNTING

RESULTS

AB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

reparation batch 6160-152

| | | | |
|-----------|----------|------------------------|------|
| 809083-01 | 7889-001 | J17HH8 | 16.6 |
| 809083-02 | 7889-002 | Lab Control Sample | LOW |
| 809083-03 | 7889-003 | Method Blank | U |
| 809083-04 | 7889-004 | Duplicate (R809083-01) | ok |

nominal values and limits from method RDLs (pCi/g) 50.0
 00H Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

| AB | RAW | SUF- | MDA | ALIQ | PREP | DILU- | YIELD | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- | | | | |
|--|------|------|------------------------|-----------|-------|-------|-------|------|-------|------|-------|------|----------|-------|----------|------|----------|
| SAMPLE ID | TEST | FIX | CLIENT | SAMPLE ID | pCi/g | g | FAC | TION | % | % | min | keV | KeV | HELD | PREPARED | YZED | DETECTOR |
| reparation batch 6160-152 2σ prep error 10.0 % Reference Lab Notebook #6160, pg. 152 | | | | | | | | | | | | | | | | | |
| 309083-01 | | | J17HH8 | | 3.59 | 0.392 | | | 100 | 50 | | 11 | 09/15/08 | 09/15 | LSC-006 | | |
| 309083-02 | | | Lab Control Sample | | 3.38 | 0.300 | | | 100 | 100 | | | 09/15/08 | 09/16 | LSC-006 | | |
| 309083-03 | | | Method Blank | | 4.70 | 0.300 | | | 100 | 50 | | | 09/15/08 | 09/15 | LSC-006 | | |
| 309083-04 | | | Duplicate (R809083-01) | | 3.51 | 0.399 | | | 100 | 50 | | 11 | 09/15/08 | 09/15 | LSC-006 | | |

nominal values and limits from method 50.0 0.300 10 180

PROCEDURES REFERENCE C14_COX_LSC
 CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 3.80 ± 1.22
 FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1325

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
SDG 7889
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1325

RESULTS

AB RAW SUP-
AMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

reparation batch 6160-152

| | | | |
|-----------|----------|------------------------|-----|
| 809083-01 | 7889-001 | J17HH8 | 129 |
| 809083-02 | 7889-002 | Lab Control Sample | ok |
| 809083-03 | 7889-003 | Method Blank | U |
| 809083-04 | 7889-004 | Duplicate (R809083-01) | ok |

ominal values and limits from method RDLs (pCi/g) 30.0
00H Burial Grnds Remain Sites-SQT

METHOD PERFORMANCE

AB RAW SUP- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
AMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

reparation batch 6160-152 2σ prep error 11.2 % Reference Lab Notebook #6160, pg. 152

| | | | | | | | | | |
|-----------|------------------------|------|-------|----|----|----|----------|-------|---------|
| 809083-01 | J17HH8 | 3.32 | 0.500 | 89 | 50 | 15 | 09/19/08 | 09/19 | LSC-006 |
| 809083-02 | Lab Control Sample | 3.05 | 0.500 | 99 | 50 | | 09/19/08 | 09/19 | LSC-006 |
| 809083-03 | Method Blank | 2.96 | 0.500 | 99 | 50 | | 09/19/08 | 09/19 | LSC-006 |
| 809083-04 | Duplicate (R809083-01) | 3.28 | 0.500 | 90 | 50 | 15 | 09/19/08 | 09/19 | LSC-006 |

ominal values and limits from method 30.0 0.500 30-105 25 180

PROCEDURES REFERENCE NI63_LSC
SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
CP-280 Nickel-63 Purification, rev 3

AVERAGES ± 2 SD MDA 3.15 ± 0.350
FOR 4 SAMPLES YIELD 94 ± 11

METHOD SUMMARIES

Page 9

SUMMARY DATA SECTION

Page 22

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1325

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.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 23

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1325

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 Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1325

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.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

Page 25

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. S00W235A00

Case no SDG_K1325

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).

REPORT GUIDES

Page 4

SUMMARY DATA SECTION

Page 26

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1325

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.

REPORT GUIDES

Page 5

SUMMARY DATA SECTION

Page 27

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1325

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.

REPORT GUIDES

Page 6

SUMMARY DATA SECTION

Page 28

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1325

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 Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1325

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.

REPORT GUIDES

Page 8

SUMMARY DATA SECTION

Page 30

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. S00W235A00
Case no SDG_K1325

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 Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1325

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

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 32

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1325

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.

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 33

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1325

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'

REPORT GUIDES

Page 12

SUMMARY DATA SECTION

Page 34

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1325

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.
- * Preparation 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.

REPORT GUIDES

Page 13

SUMMARY DATA SECTION

Page 35

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1325

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

REPORT GUIDES

Page 14

SUMMARY DATA SECTION

Page 36

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 09/25/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1325

SDG 7889
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1325

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.

REPORT GUIDES

Page 15

SUMMARY DATA SECTION

Page 37

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/25/08

| | | | | | | | |
|---|---|---|-------------------------------------|-----------------------------|------------|-----------------|-------------|
| Washington Closure Hanford | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | | RC-110-002 | Page 1 of 1 |
| Collector <i>Etherington T.</i> | Company Contact <i>Doug Bowers</i> | Telephone No. <i>509 531-0701</i> | Project Coordinator KESSNER, JH | | Price Code | Data Turnaround | |
| Project Designation 100-H Burial Grounds Remaining Sites - Soil Quick Turn | Sampling Location <i>118-14-5 K1325 (7889)</i> | SAF No. RC-110 | | <i>2 DE 1-10-08 1st day</i> | | | |
| Ice Chest No. <i>ERC-99-046 + Shipping Van 96-006</i> | Field Logbook No. <i>EL1627</i> | COA <i>R118H52600</i> | Method of Shipment <i>Fed Ex</i> | | | | |
| Shipped To <u>EBERLINE SERVICES</u> LIONVILLE | Offsite Property No. | Bill of Lading/Air Bill No. <i>see OSPC</i> | | | | | |

| Special Handling and/or Storage | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | None |
|---------------------------------|---------------------|-------|---------|---------|---------|---------------|-------|-------|-------|-------|-------------|
| | Type of Container | aG | aG | aG | aG | P | aG | aG | aG | aG | P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | <i>10</i> | 1 | 1 | 1 | 1 | <i>10</i> |
| | Volume | 250mL | 250mL | 250mL | 250mL | <i>1000mL</i> | 250ml | 250mL | 250mL | 250mL | <i>1000</i> |

| SAMPLE ANALYSIS | | | | See item (1) in Special Instructions. | PCBs - 8082 | Semi-VOA - 8270A (TCL) | VOA - 8260A (TCL) | See item (2) in Special Instructions. | Technetium-99 Neptunium-237: <i>0709-27-08</i> | Carbon-14 Low Level. Tellurium-129 <i>0709-27-08</i> | Nickel-63; Strontium-90 -- Total <i>0709-27-08</i> | Isotopic Plutonium; Isotopic Uranium | Gross Alpha; Gross Beta |
|-----------------|--|--|--|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|---|---|---|--------------------------------------|-------------------------|
|-----------------|--|--|--|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|---|---|---|--------------------------------------|-------------------------|

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|------------|----------|-------------|-------------|--|--|--|--|---|---|---|---|---|---|
| J17HH8 | SOIL | 9-4-08 | 0835 | | | | | X | X | X | X | X | X |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | Matrix * |
|---|---------------------------------|---|---------------------------------|---|--|--|
| Relinquished By/Removed From <i>Tony Etherington</i> | Date/Time <i>9-4-08 0847</i> | Received By/Stored In <i>Doug Bowers</i> | Date/Time <i>9-4-08/0847</i> | (1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238} <i>pull gross alpha/beta from 1 liter GEA</i> | | S=Soil SE=Sediment SO=Solid SL=Sludge W = Water U=Uil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other |
| Relinquished By/Removed From <i>Doug Bowers</i> | Date/Time <i>9-4-08/1617</i> | Received By/Stored In <i>RCP/A 1860 B/dg</i> | Date/Time <i>9-7-08/1617</i> | | | |
| Relinquished By/Removed From <i>LOGG/IA</i> | Date/Time <i>SEP 09 2008</i> | Received By/Stored In <i>MSLankouch</i> | Date/Time <i>SEP 09 2008</i> | | | |
| Relinquished By/Removed From <i>WCH</i> | Date/Time <i>SEP 09 2008</i> | Received By/Stored In <i>Fed Ex</i> | Date/Time <i>09/10/08</i> | | | |
| Relinquished By/Removed From <i>PEA</i> | Date/Time <i>09/10/08</i> | Received By/Stored In <i>Fed Ex</i> | Date/Time <i>09:05</i> | | | |

| | | | |
|--------------------------|-----------------|-------------|-----------|
| LABORATORY SECTION | Received By | Title | Date/Time |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

Kmw

JK 9/10/08

Client: W.C. HANFORD City RICHLAND State WA
 Date/Time received 09/10/08 09:10 CoC No. RC-110-002
 Container I.D. No. ERC-046 Requested TAT (Days) 15 P.D. Received Yes [] No []

96-006

INSPECTION

- 1 Custody seals on shipping container intact? Yes [X] No [] N/A []
- 2 Custody seals on shipping container dated & signed? Yes [Y] 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 1 Sample Matrix S
- 7 Number of containers per sample 4 (Or see CoC _____)
- 8 Samples are in correct container Yes [Y] 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 [] in _____ Preservative _____
- 13 Describe any anomalies

14 Was P.M. notified of any anomalies? Yes [] No [] Date _____
 15 Inspected by [Signature] Date 09/10/08 Time 10:15

| Customer Sample No | Beta/Gamma com | Ion Chamber mR/hr | Wide | Customer Sample No | Beta/Gamma com | Ion Chamber mR/hr | Wide |
|--------------------|----------------|-------------------|------|--------------------|----------------|-------------------|------|
| J17HH8 | 260 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 10042 Calibration date 10JUL08



23 September 2008



Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

| | |
|---------------|----------|
| LvLI Batch # | 0809L086 |
| SDG # | K1325 |
| SAF # | RC-110 |
| Date Received | 9/10/08 |
| # Samples | 1 |
| Matrix | SOIL |
| Volatiles | X |
| Semivolatiles | X |
| Pest/PCB | X |
| Glycols | |
| DRO/KRO/GRO | |
| PAHs | |
| Herbicides | |
| Metals | X |
| Inorganics | |

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory

Orlette S. Johnson
Project Manager

r:\group\pm\orlette\hanford\data\b_ltrs.doc

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-110 K1325



DATE RECEIVED: 09/10/08

LVL LOT # :0809L085

| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|-----------|---------|-----|----------|------------|-----------|----------|
| J17HH8 | 001 | S | 08LVK169 | 09/04/08 | N/A | 09/11/08 |
| J17HH8 | 001 MS | S | 08LVK169 | 09/04/08 | N/A | 09/11/08 |
| J17HH8 | 001 MSD | S | 08LVK169 | 09/04/08 | N/A | 09/11/08 |

LAB QC:

| | | | | | | |
|--------|--------|---|----------|-----|-----|----------|
| VBLKGI | MB1 | S | 08LVK169 | N/A | N/A | 09/11/08 |
| VBLKGI | MB1 BS | S | 08LVK169 | N/A | N/A | 09/11/08 |



Case Narrative

Client: WC-HANFORD RC-110
LVL #: 0809L086
SDG/SAF # K1325/RC-110

W.O. #: 60049-001-001-0001-00
Date Received: 09-10-2008

GC/MS VOLATILE

One (1) soil sample was collected on 09-04-2008.

The sample and the associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL Volatile target compounds on 09-11-2008.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. The sample was analyzed within required holding time.
2. Non-target compounds were detected in these samples.
3. Five (5) of fifteen (15) surrogate recoveries were outside acceptance criteria. However, all reanalysis requirements were met with the analysis of the matrix spike of sample J17HH8 on 09-11-2008.
4. Twenty seven (27) of seventy (70) matrix spike recoveries were outside acceptance criteria due to possible matrix effect.
5. All blank spike recoveries were within acceptance criteria.
6. The method blank was below the reporting limit for all target compounds.
7. Internal areas were outside QC limits for sample J17HH8, however, associated matrix spike analyses fulfilled its reanalysis requirement.

r:\group\data\2008\voa\tnu\0809-086cs1.doc

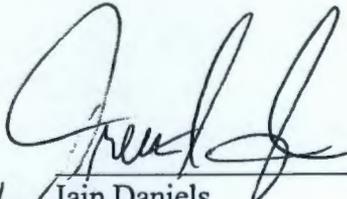
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of

13

pages.



8. Manual integrations are performed according to SOP QA-125 to produce quality data with utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
9. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/18/08
Date

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following 'flags' are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: Manually added peak not found by automatic quan program.
- PA - Peak Assignment: Quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: Routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the Dichlorobenzene isomers on the VOA packed column and Benzo (b) fluoranthene /Benzo (k) fluoranthene which are poorly resolve on the BNA column.
- SP - Split Peak: The automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Co-elution/ Background: Peak was manually integrated to eliminate contribution from co-eluting compounds, background signal, or other interference.
- PI - Proper Integration: A peak with poor or inconsistent integration (i.e., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List

Report Date: 09/16/08 12:30

RFW Batch Number: 0809L086

Client: WC-HANFORD RC-110 K1325 Work Order: 60049001001 Page: 1a

000000007

| Sample Information | Cust ID: | J17HH8 | J17HH8 | J17HH8 | VBLKGI | VBLKGI BS |
|--|-----------------------|---------|---------|---------|--------------|--------------|
| | RFW#: | 001 | 001 MS | 001 MSD | 08LVK169-MB1 | 08LVK169-MB1 |
| | Matrix: | SOIL | SOIL | SOIL | SOIL | SOIL |
| | D.F.: | 1.04 | 1.00 | 0.943 | 1.00 | 1.00 |
| | Units: | ug/Kg | ug/Kg | ug/Kg | ug/Kg | ug/Kg |
| Surrogate | Toluene-d8 | 134 % | 132 % | 257 * % | 99 % | 101 % |
| Recovery | Bromofluorobenzene | 191 * % | 162 * % | 406 * % | 112 % | 113 % |
| | 1,2-Dichloroethane-d4 | 115 % | 105 % | 156 * % | 66 % | 77 % |
| -----fl-----fl-----fl-----fl-----fl-----fl-----fl----- | | | | | | |
| Chloromethane | | 11 U | 105 % | 162 % | 10 U | 64 % |
| Bromomethane | | 11 U | 114 % | 175 % | 10 U | 101 % |
| Vinyl Chloride | | 11 U | 97 % | 147 % | 10 U | 83 % |
| Chloroethane | | 11 U | 116 % | 174 % | 10 U | 95 % |
| Methylene Chloride | | 12 B | 74 % | 131 % | 2 J | 61 % |
| Acetone | | 36 | 166 % | 423 * % | 10 U | 69 % |
| Carbon Disulfide | | 6 U | 106 % | 136 % | 5 U | 101 % |
| 1,1-Dichloroethene | | 6 U | 110 % | 149 % | 5 U | 105 % |
| 1,1-Dichloroethane | | 6 U | 110 % | 157 * % | 5 U | 93 % |
| 1,2-Dichloroethene (total) | | 6 U | 110 % | 154 * % | 5 U | 97 % |
| Chloroform | | 6 U | 103 % | 141 * % | 5 U | 92 % |
| 1,2-Dichloroethane | | 6 U | 98 % | 148 * % | 5 U | 81 % |
| 2-Butanone | | 21 | 157 % | 369 * % | 10 U | 86 % |
| 1,1,1-Trichloroethane | | 6 U | 84 % | 93 % | 5 U | 84 % |
| Carbon Tetrachloride | | 6 U | 76 % | 76 % | 5 U | 84 % |
| Bromodichloromethane | | 6 U | 102 % | 131 % | 5 U | 95 % |
| 1,2-Dichloropropane | | 6 U | 110 % | 145 * % | 5 U | 96 % |
| cis-1,3-Dichloropropene | | 6 U | 146 * % | 296 * % | 5 U | 103 % |
| Trichloroethene | | 6 U | 83 % | 89 % | 5 U | 89 % |
| Dibromochloromethane | | 6 U | 128 % | 240 * % | 5 U | 96 % |
| 1,1,2-Trichloroethane | | 6 U | 146 * % | 313 * % | 5 U | 100 % |
| Benzene | | 6 U | 106 % | 136 % | 5 U | 98 % |
| Trans-1,3-Dichloropropene | | 6 U | 139 * % | 285 * % | 5 U | 97 % |
| Bromoform | | 6 U | 113 % | 197 * % | 5 U | 90 % |
| 4-Methyl-2-pentanone | | 11 U | 169 * % | 449 * % | 10 U | 90 % |
| 2-Hexanone | | 14 | 173 % | 571 * % | 10 U | 88 % |
| Tetrachloroethene | | 6 U | 85 % | 109 % | 5 U | 90 % |
| 1,1,2,2-Tetrachloroethane | | 6 U | 205 * % | 563 * % | 5 U | 117 % |
| Toluene | | 6 U | 126 % | 198 * % | 5 U | 106 % |

*= Outside of EPA CLP QC limits.

Cust ID: J17HH8 J17HH8 J17HH8 VBLKGI VBLKGI BS

RFW#: 001 001 MS 001 MSD 08LVK169-MB1 08LVK169-MB1

| | | | | | | | | | | |
|--------------------------|---|---|-----|---|-----|-----|---|---|-----|---|
| Chlorobenzene | 6 | U | 119 | % | 173 | * % | 5 | U | 105 | % |
| Ethylbenzene | 6 | U | 112 | % | 147 | * % | 5 | U | 105 | % |
| Styrene | 6 | U | 117 | % | 153 | * % | 5 | U | 110 | % |
| Xylenes (total) | 6 | U | 113 | % | 140 | * % | 5 | U | 107 | % |
| cis-1,2-dichloroethene | 6 | U | 112 | % | 162 | * % | 5 | U | 96 | % |
| trans-1,2-dichloroethene | 6 | U | 108 | % | 146 | * % | 5 | U | 97 | % |

*= Outside of EPA CLP QC limits.

0000000000

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J17HH8

Lab Name: Lionville Labs, Inc. Work Order: 60049001001

Client: WC-HANFORD RC-110 K1325

Matrix: SOIL

Lab Sample ID: 0809L086-001

Sample wt/vol: 4.80 (g/mL) G

Lab File ID: k091110

Level: (low/med) LOW

Date Received: 09/10/08

% Moisture: not dec. 1

Date Analyzed: 09/11/08

Column: (pack/cap) CAP

Dilution Factor: 1.04

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|--------|------------|----|
| 1. | SILOXANE | 16.951 | 8 | JB |
| 2. | UNKNOWN | 20.414 | 6 | J |
| 3. | UNKNOWN | 22.119 | 10 | JB |
| 4. | UNKNOWN | 24.608 | 10 | J |

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKGI

Lab Name: Lionville Labs, Inc. Work Order: 60049001001

Client: WC-HANFORD RC-110 K1325

Matrix: SOIL

Lab Sample ID: 08LVK169-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: k091105

Level: (low/med) LOW

Date Received: 09/11/08

% Moisture: not dec. 0

Date Analyzed: 09/11/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|--------|------------|---|
| 1. | SILOXANE | 16.934 | 5 | J |

| | | | | | | | | | |
|---|--|--|--|--|--|---|--|-------------|--|
| Washington Closure Hanford | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | | RC-110-002 | | Page 1 of 1 | |
| Collector <i>Etherington T.</i> | | Company Contact <i>Doug Bowers</i> | | Telephone No. <i>509 531-0701</i> | | Project Coordinator KESSNER, JH | | Price Code | |
| Project Designation 100-H Burial Grounds Remaining Sites - Soil Quick Turn | | Sampling Location <i>118-H-5</i> | | SAF No. RC-110 | | Data Turnaround <i>2 DE 8-10-09 15 day</i> | | | |
| Ice Chest No. <i>GRP-03-004 + AFS-04-124</i> | | Field Logbook No. <i>EL1627</i> | | COA <i>R118H52600</i> | | Method of Shipment <i>Fed Ex</i> | | | |
| Shipped To EBERLINE SERVICES <u>LIONVILLE</u> | | Offsite Property No. <i>A080347</i> | | Bill of Lading/Air Bill No. <i>SEC OPRC</i> | | | | | |

| | | | | | | | | | | | |
|---------------------------------|---------------------|-------|---------|---------|---------|--------|-------|-------|-------|-------|------|
| POSSIBLE SAMPLE HAZARDS/REMARKS | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | None |
| | Type of Container | aG | aG | aG | aG | P | aG | aG | aG | aG | P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volume | 250mL | 250mL | 250mL | 250mL | 1000mL | 250ml | 250mL | 250mL | 250mL | 60mL |

| | | | | | | | | | | |
|---------------------------------|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|--|-----------------------------------|--|--------------------------------------|-------------------------|
| SPECIAL HANDLING and/or Storage | See item (1) in Special Instructions. | PCBs - 8082 | Semi-VOA - 8270A (TCL) | VOA - 8260A (TCL) | See item (2) in Special Instructions. | Iodine-129; Neptunium-237; Technetium-99 | Carbon-14 Low Level; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium; Isotopic Uranium | Gross Alpha; Gross Beta |
| | SAMPLE ANALYSIS | | | | | | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
|------------|----------|---------------|-------------|----------|----------|----------|----------|--|--|--|--|--|
| J17HH8 | SOIL | <i>9-4-08</i> | <i>0835</i> | <i>X</i> | <i>X</i> | <i>X</i> | <i>X</i> | | | | | |
| | | | | | | | | | | | | |
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|--|-----------------------------------|---|-----------------------------------|---|--|--|--|--|
| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | | | Matrix * |
| Relinquished By/Removed From <i>Tony Etherington</i> | Date/Time <i>9-4-08 0847</i> | Received By/Stored In <i>Doug Bowers / Doug Bowers</i> | Date/Time <i>9-4-08 / 0847</i> | <p><i>870 8-27-08</i></p> <p>(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)</p> <p>(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238)</p> | | | | <p>S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time Wl=Wipe L=Liquid V=Vegetation X=Other</p> |
| Relinquished By/Removed From <i>Doug Bowers / Doug Bowers</i> | Date/Time <i>9-4-08 / 1105</i> | Received By/Stored In <i>Rif / A 1060 bldg</i> | Date/Time <i>9-4-08 / 1105</i> | | | | | |
| Relinquished By/Removed From <i>1060/IA</i> | Date/Time <i>SEP 09 2008</i> | Received By/Stored In <i>MSTA</i> | Date/Time <i>SEP 09 2008</i> | | | | | |
| Relinquished By/Removed From <i>MSTA</i> | Date/Time <i>SEP 09 2008</i> | Received By/Stored In <i>Fed Ex</i> | Date/Time <i>SEP 09 2008</i> | | | | | |
| Relinquished By/Removed From <i>Fed Ex</i> | Date/Time <i>9-10-08 0935</i> | Received By/Stored In <i>Fed Ex</i> | Date/Time <i>9-10-08 0935</i> | | | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | | | |

| | | | |
|--------------------------|-----------------|-------------|-----------|
| LABORATORY SECTION | Received By | Title | Date/Time |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

000000012

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Wc Hartford RC-110
 Project/SAF/SOW/Release #:

Date: 9/10/08

LvLI Batch #: 0809L086

Sample Custodian: V. Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|--|--|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier | Airbill # | <u>79113340 6270</u> <u>79057364 2920</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 5. Samples received <u>cooled</u> or ambient? | Temp <u>2-4</u> <u>2-1</u> | °C | Cooler # <u>GRP. 03-004</u> <u>AFS. 04-124</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR | <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | | Date _____ | |



Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-110 K1325



DATE RECEIVED: 09/10/08

LVL LOT # :0809L086

| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|-----------|---------|-----|----------|------------|-----------|----------|
| J17HH8 | 001 | S | 08LE0437 | 09/04/08 | 09/15/09 | 09/18/08 |
| J17HH8 | 001 MS | S | 08LE0437 | 09/04/08 | 09/15/09 | 09/18/08 |
| J17HH8 | 001 MSD | S | 08LE0437 | 09/04/08 | 09/15/09 | 09/18/08 |

LAB QC:

| | | | | | | |
|--------|--------|---|----------|-----|----------|----------|
| PBLKUT | MB1 | S | 08LE0437 | N/A | 09/15/09 | 09/18/08 |
| PBLKUT | MB1 BS | S | 08LE0437 | N/A | 09/15/09 | 09/18/08 |



Case Narrative

Client: WC-HANFORD RC-087
LVL #: 0809L086
SDG/SAF # K1325 / RC-110

W.O. #: 11343-606-001-9999-00
Date Received: 09-10-2008

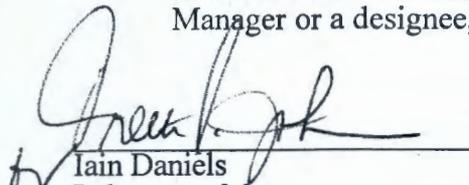
PCB

One (1) soil sample was collected on 09-04-2008.

The sample and its associated QC samples were extracted on 09-15-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 09-18-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All required holding times and analyzed within required holding time
2. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
3. The method blank was below the reporting limits for all target compounds.
4. All obtainable surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/23/08
Date

r:\group\data\2008\pest-pcb\tnu\0809-086ks1.pcb.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



GLOSSARY OF DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.
- .I** = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- NS** = Not Spiked.
- SP** = Indicates Spiked Compound.
- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.
- NPM** = No pattern match for multi-component target analytes.

RFW Batch Number: 0809L086

Client: WC-HANFORD RC-110 K1325

Work Order: 60049001001 Page: 1

| Sample Information | Cust ID: | J17HH8 | J17HH8 | J17HH8 | PBLKUT | PBLKUT BS |
|--|----------------------|--------|--------|---------|--------------|--------------|
| | RFW#: | 001 | 001 MS | 001 MSD | 08LE0437-MB1 | 08LE0437-MB1 |
| | Matrix: | SOIL | SOIL | SOIL | SOIL | SOIL |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | UG/KG | UG/KG | UG/KG | UG/KG | UG/KG |
| Surrogate: | Tetrachloro-m-xylene | 111 % | 96 % | 112 % | 96 % | 91 % |
| | Decachlorobiphenyl | 71 % | 66 % | 79 % | 100 % | 106 % |
| -----fl-----fl-----fl-----fl-----fl-----fl-----fl----- | | | | | | |
| Aroclor-1016 | | 14 U | 85 % | 96 % | 13 U | 101 % |
| Aroclor-1221 | | 14 U | 14 U | 14 U | 13 U | 13 U |
| Aroclor-1232 | | 14 U | 14 U | 14 U | 13 U | 13 U |
| Aroclor-1242 | | 14 U | 14 U | 14 U | 13 U | 13 U |
| Aroclor-1248 | | 14 U | 14 U | 14 U | 13 U | 13 U |
| Aroclor-1254 | | 43 | NR | NR | 13 U | 13 U |
| Aroclor-1260 | | 22 | 79 % | 94 % | 13 U | 116 % |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Extract. Date: 09/15/09

Extraction Batch No: 08LE0437

Analyst: MF

Method: ****

50X3540

Test: OPCB

Cleanup Date: 09/16/08

Analyst: MF

Client: WC-HANFORD RC-088 K1326

LIMS Report Date: 09/16/08

Solvent: DCM/ACETONE,HEXANE

Adsorbent: SL/AC

| Sample No: | Client Name Client ID | pH | Initial WT/VOL | Surr. Mult. | Spike Mult. | Final VOL | Final VOL | Split Mult. | GPC Y/N | % Solids | C/D FACTOR |
|------------|--------------------------|----|-------------------|----------------|----------------|--------------|--------------|----------------|------------|-------------|---------------|
| 0809L054- | WC-HANFORD RC-088 K1326 | | | | | | | | | | |
| 006 | J17H33 | | 15.0 | 1.0 | | 10 | | 1.0 | N | 0.0 | 666.7 |
| 007 | J17H34 | | 15.0 | 1.0 | | 10 | | 1.0 | N | 0.0 | 666.7 |
| 007 -S | J17H34 | | 15.0 | 1.0 | 1.0 | 10 | | 1.0 | N | 0.0 | 666.7 |
| 007 -T | J17H34 | | 15.0 | 1.0 | 1.0 | 10 | | 1.0 | N | 0.0 | 666.7 |
| 0809L058- | BJC BKWO02436B | | | | | | | | | | |
| 001 | TSCA-20011 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 0.0 | 333.3 |
| 0809L083- | BJC BKET02496 | | | | | | | | | | |
| 001 | K7701790 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 81.54 | 408.8 |
| 001 -S | K7701790 | | 30.0 | 1.0 | 1.0 | 10 | | 1.0 | N | 81.54 | 408.8 |
| 001 -T | K7701790 | | 30.0 | 1.0 | 1.0 | 10 | | 1.0 | N | 81.54 | 408.8 |
| 002 | K7701793 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 90.32 | 369.1 |
| 003 | K7701796 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 92.87 | 358.9 |
| 004 | K7701799 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 89.73 | 371.5 |
| 005 | K7701802 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 89.74 | 371.4 |
| 006 | K7701805 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 92.51 | 360.3 |
| 007 | K7701808 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 93.09 | 358.1 |
| 008 | K7701811 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 86.96 | 383.3 |
| 009 | K7701814 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 88.56 | 376.4 |
| 010 | K7701817 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 88.39 | 377.1 |
| 011 | K7701820 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 88.26 | 377.7 |
| 012 | K7701823 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 89.03 | 374.4 |
| 013 | K7701826 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 86.90 | 383.6 |
| 0809L086- | WC-HANFORD RC-110 K1325 | | | | | | | | | | |
| 001 | J17HH8 | | 30.0 | 1.0 | | 10 | | 1.0 | N | 98.61 | 338.0 |

Comments:

Surrogate: 250 UL OLM PSURR 89916407

Spike: 250 UL AR1660 89916603

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|--------------------|----------------------|-------------|----------------------|---------------------|
| <i>all</i> | <i>[Signature]</i> | <i>9/16/08 16:38</i> | <i>SZ</i> | <i>9/16/08 16:38</i> | <i>GC</i> |

SAMPLE EXTRACTION RECORD

Sheet no.: 2

Extract. Date: 09/15/09

Extraction Batch No: 08LE0437

Analyst: MF

Method: **** *SOF3546*

Test: OPCB

Cleanup Date: 09/16/08

Analyst: MF

Client: WC-HANFORD RC-088 K1326

LIMS Report Date: 09/16/08

Solvent: DCM/ACETONE,HEXANE

Adsorbent: SL/AC

| Sample No: | Client Name Client ID | pH | Initial Surr. WT/VOL | Spike Mult. | Final Mult. | Final VOL | Final VOL | Split Mult. | GPC Y/N | % Solids | C/D FACTOR |
|-----------------|--------------------------|------|-------------------------|----------------|----------------|--------------|--------------|----------------|------------|-------------|---------------|
| 0809L086- | WC-HANFORD RC-110 K1325 | | | | | | | | | | |
| 001 -S | J17HH8 | 30.0 | 1.0 | 1.0 | 10 | | | 1.0 | N | 98.61 | 338.0 |
| 001 -T | J17HH8 | 30.0 | 1.0 | 1.0 | 10 | | | 1.0 | N | 98.61 | 338.0 |
| 08LE0437-MB1 | PBLKUT | 30.0 | 1.0 | | 10 | | | 1.0 | N | 100.00 | 333.3 |
| 08LE0437-MB1 -S | PBLKUT | 30.0 | 1.0 | 1.0 | 10 | | | 1.0 | N | 100.00 | 333.3 |

Comments:

Surrogate: 250 UL OLM PSURR 89916407

Spike: 250 UL AR1660 89916603

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|--------------------|--------------|-------------|-----------|---------------------|
| <i>[Signature]</i> | <i>[Signature]</i> | 9/16/08 1630 | | | |

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| | | | | | |
|--|--|--------------------------------------|--|---------------------------|----------------------------------|
| Collector Etherington T. | Company Contact Doug Bowers | Telephone No. 509 531-0701 | Project Coordinator KESSNER, JH | Price Code 2 DE | Data Turnaround 15 day |
| Project Designation 100-H Burial Grounds Remaining Sites - Soil Quick Turn | Sampling Location 118-H-5 | SAF No. RC-110 | Method of Shipment Fed Ex | | |
| Case Chest No. KP-03-004 + AFS-04-124 | Field Logbook No. EL1627 | COA R119H52600 | Bill of Lading/Air Bill No. SEC OPRC | | |
| Shipped To EBERLINE SERVICES (LIONVILLE) | Offsite Property No. A080347 | | | | |

| POSSIBLE SAMPLE HAZARDS/REMARKS | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | None |
|---------------------------------|---------------------|-------|---------|---------|---------|--------|-------|-------|-------|-------|------|
| | Type of Container | aG | aG | aG | aG | P | aG | aG | aG | aG | P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volume | 250mL | 250mL | 250mL | 250mL | 1000mL | 250ml | 250mL | 250mL | 250mL | 60mL |

Special Handling and/or Storage

| SAMPLE ANALYSIS | | | | See item (1) in Special Instructions. | PCBs - 8082 | Semi-VOA - 8270A (TCL) | VOA - 8260A (TCL) | See item (2) in Special Instructions. | Iodine-129; Neptunium-237; Technetium-99 | Carbon-14 Low Level; Tritium - H3 | Nickel-63; Strontium-89,90 - Total Sr | Isotopic Plutonium; Isotopic Uranium | Gross Alpha; Gross Beta |
|-----------------|----------|-------------|-------------|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|--|-----------------------------------|---------------------------------------|--------------------------------------|-------------------------|
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
| 17HH8 | SOIL | 9-4-08 | 0835 | X | X | X | X | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | Matrix * |
|--|--------------------------------------|---|--------------------------------------|---|--|--|
| Relinquished By/Removed From By Eberline Services | Date/Time 9-4-08 0847 | Received By/Stored In Doug Bowers / Doug Bowers | Date/Time 9-4-08/0847 | (1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238) | | S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Dryer Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other |
| Relinquished By/Removed From Doug Bowers / Doug Bowers | Date/Time 9-4-08/1615 | Received By/Stored In Rif / A 1060 bldg | Date/Time 9-4-08/1615 | | | |
| Relinquished By/Removed From 1060/IA | Date/Time SEP 09 2008 1100 | Received By/Stored In MSP mstantouch | Date/Time SEP 09 2008 1100 | | | |
| Relinquished By/Removed From MSLA FOUR | Date/Time SEP 09 2008 1100 | Received By/Stored In Fed Ex | Date/Time SEP 09 2008 1100 | | | |
| Relinquished By/Removed From Fed Ex | Date/Time 9-10-08 0935 | Received By/Stored In [Signature] | Date/Time 9-10-08 0935 | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

| | | | |
|--------------------------|-----------------|-------------|-----------|
| LABORATORY SECTION | Received By | Title | Date/Time |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

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Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hartford RC-110
 Project/SAF/SOW/Release #:

Date: 9/10/08

LvLI Batch #: 0809L086

Sample Custodian: V. Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|---|--|--|
| 1. Samples Hand Delivered or Shipped? | Carrier | | Airbill # <u>79113340 6270</u> <u>79057304 2920</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 5. Samples received <u>cooled</u> or ambient? | Temp <u>2-4</u> <u>2-1</u> | °C | Cooler # <u>GRP. 03-004</u> <u>AFS. 04-124</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR | <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Yes | <input type="checkbox"/> No <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | | Date _____ | |



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 WC-HANFORD RC-110 K1325



DATE RECEIVED: 09/10/08

LVL LOT # :0809L086

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| J17HH8 | | | | | | |
| SILVER, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| SILVER, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| SILVER, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| ARSENIC, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| ARSENIC, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| ARSENIC, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| BARIUM, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| BARIUM, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| BARIUM, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| CADMIUM, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| CADMIUM, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| CADMIUM, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| CHROMIUM, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| CHROMIUM, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| CHROMIUM, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| MERCURY, TOTAL | 001 | S | 08C0160 | 09/04/08 | 09/15/08 | 09/16/08 |
| MERCURY, TOTAL | 001 REP | S | 08C0160 | 09/04/08 | 09/15/08 | 09/16/08 |
| MERCURY, TOTAL | 001 MS | S | 08C0160 | 09/04/08 | 09/15/08 | 09/16/08 |
| LEAD, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| LEAD, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| LEAD, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| SELENIUM, TOTAL | 001 | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| SELENIUM, TOTAL | 001 REP | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |
| SELENIUM, TOTAL | 001 MS | S | 08L0336 | 09/04/08 | 09/15/08 | 09/17/08 |

LAB QC:

| | | | | | | |
|--------------------|--------|---|---------|-----|----------|----------|
| SILVER LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| SILVER, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| ARSENIC LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| ARSENIC, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| BARIUM LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| BARIUM, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| CADMIUM LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| CADMIUM, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-110 K1325

DATE RECEIVED: 09/10/08

LVL LOT # :0809L086

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|--------|-----|---------|------------|-----------|----------|
| CHROMIUM LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| CHROMIUM, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| MERCURY LABORATORY | LC1 BS | S | 08C0160 | N/A | 09/15/08 | 09/16/08 |
| MERCURY, TOTAL | MB1 | S | 08C0160 | N/A | 09/15/08 | 09/16/08 |
| LEAD LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| LEAD, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| SELENIUM LABORATORY | LC1 BS | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |
| SELENIUM, TOTAL | MB1 | S | 08L0336 | N/A | 09/15/08 | 09/16/08 |



Analytical Report

Client: WC-HANFORD RC-110
LVL#: 0809L086
SDG/SAF#: K1325/RC-110

W.O.#: 60049-001-001-0001-00
Date Received: 09-10-08

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

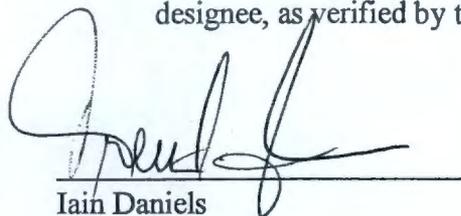
The sample was run with a 3-fold dilution for ICP metals due to sample matrix.

3. All analyses were performed within the required holding times.
4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ). Exposure 3 for CCB2 in file TA0917A was eliminated as an outlier due to insufficient sample in the cup.
6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
7. All ICP Interference Check Standards were within control limits.
8. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
9. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

Inorganics Accuracy Report.

10. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
11. For the purposes of this report, the data has been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.
12. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

alm/m09-086

9/18/08
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within the lot#:

08091086

Leaching Procedure: 1310 1311 1312 Other: _____

MLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050B 3051 200.7 SS17
Other: _____

Metals Analysis Methods

| | SW846 | EPA | STD MTD | EPA OSWR | USATHAMA |
|-------------|---|---|--------------|-------------|-------------|
| Aluminum | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Antimony | <u>6010B</u> <u>7041^s</u> | <u>200.7</u> <u>204.2</u> | | | <u>99</u> |
| Arsenic | <input checked="" type="checkbox"/> <u>6010B</u> <u>7060A^s</u> | <u>200.7</u> <u>206.2</u> | <u>3113B</u> | | <u>99</u> |
| Barium | <input checked="" type="checkbox"/> <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Beryllium | <u>6010B</u> | <u>200.7</u> | | <u>1620</u> | <u>99</u> |
| Bismuth | <u>6010B</u> ¹ | <u>200.7</u> ¹ | | | <u>99</u> |
| Boron | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Cadmium | <input checked="" type="checkbox"/> <u>6010B</u> <u>7131A^s</u> | <u>200.7</u> <u>213.2</u> | | | <u>99</u> |
| Calcium | <u>6010B</u> | <u>200.7</u> | | | <u>SS17</u> |
| Chromium | <input checked="" type="checkbox"/> <u>6010B</u> <u>7191^s</u> | <u>200.7</u> <u>218.2</u> | | | <u>99</u> |
| Cobalt | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Copper | <u>6010B</u> <u>7211^s</u> | <u>200.7</u> <u>220.2</u> | | | <u>99</u> |
| Iron | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Lead | <input checked="" type="checkbox"/> <u>6010B</u> <u>7421^s</u> | <u>200.7</u> <u>239.2</u> | <u>3113B</u> | | <u>99</u> |
| Lithium | <u>6010B</u> <u>7430⁴</u> | <u>200.7</u> | | <u>1620</u> | <u>99</u> |
| Magnesium | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Manganese | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Mercury | <u>7470A^s</u> <input checked="" type="checkbox"/> <u>7471A^s</u> | <u>245.1²</u> <u>245.5²</u> | | | <u>99</u> |
| Molybdenum | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Nickel | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Potassium | <u>6010B</u> <u>7610⁴</u> | <u>200.7</u> <u>258.1⁴</u> | | <u>1620</u> | <u>99</u> |
| Rare Earths | <u>6010B</u> ¹ | <u>200.7</u> ¹ | | | <u>99</u> |
| Selenium | <input checked="" type="checkbox"/> <u>6010B</u> <u>7740^s</u> | <u>200.7</u> <u>270.2</u> | <u>3113B</u> | | <u>99</u> |
| Silicon | <u>6010B</u> ¹ | <u>200.7</u> | | <u>1620</u> | <u>99</u> |
| Silica | <u>6010B</u> | <u>200.7</u> | | <u>1620</u> | <u>99</u> |
| Silver | <input checked="" type="checkbox"/> <u>6010B</u> <u>7761^s</u> | <u>200.7</u> <u>272.2</u> | | | <u>99</u> |
| Sodium | <u>6010B</u> <u>7770⁴</u> | <u>200.7</u> <u>273.1⁴</u> | | | <u>99</u> |
| Strontium | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Thallium | <u>6010B</u> <u>7841^s</u> | <u>200.7</u> <u>279.2</u> <u>200.9</u> | | | <u>99</u> |
| Tin | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Titanium | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Uranium | <u>6010B</u> ¹ | <u>200.7</u> ¹ | | <u>1620</u> | <u>99</u> |
| Vanadium | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Zinc | <u>6010B</u> | <u>200.7</u> | | | <u>99</u> |
| Zirconium | <u>6010B</u> ¹ | <u>200.7</u> ¹ | | <u>1620</u> | <u>99</u> |

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate.
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/18/08

CLIENT: WC-HANFORD RC-110 K1325
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0809L086

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|--------|---------|-----------------|--------|-------|--------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| -001 | J17HH8 | Silver, Total | 0.27 u | MG/KG | 0.27 | 3.0 |
| | | Arsenic, Total | 3.8 | MG/KG | 1.3 | 3.0 |
| | | Barium, Total | 89.1 | MG/KG | 0.27 | 3.0 |
| | | Cadmium, Total | 0.57 | MG/KG | 0.13 | 3.0 |
| | | Chromium, Total | 17.5 | MG/KG | 0.53 | 3.0 |
| | | Mercury, Total | 0.02 | MG/KG | 0.01 | 1.0 |
| | | Lead, Total | 12.5 | MG/KG | 0.80 | 3.0 |
| | | Selenium, Total | 1.6 u | MG/KG | 1.6 | 3.0 |

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/18/08

CLIENT: WC-HANFORD RC-110 K1325
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0809L086

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|--------|-------------|-----------------|--------|-------|--------------------|--------------------|
| BLANK1 | 08L0336-MB1 | Silver, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Arsenic, Total | 0.50 u | MG/KG | 0.50 | 1.0 |
| | | Barium, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Cadmium, Total | 0.05 u | MG/KG | 0.05 | 1.0 |
| | | Chromium, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Lead, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Selenium, Total | 0.60 u | MG/KG | 0.60 | 1.0 |
| BLANK1 | 08C0160-MB1 | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/18/08

CLIENT: WC-HANFORD RC-110 K1325
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0809L086

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR (SPK) |
|--------|---------|-----------------|------------------|-------------------|------------------|--------|--------------------------|
| 001 | J17H8 | Silver, Total | 3.9 | 0.27u | 4.3 | 90.7 | 3.0 |
| | | Arsenic, Total | 159 | 3.8 | 173 | 89.6 | 3.0 |
| | | Barium, Total | 247 | 89.1 | 173 | 91.3 | 3.0 |
| | | Cadmium, Total | 4.6 | 0.57 | 4.3 | 93.7 | 3.0 |
| | | Chromium, Total | 30.7 | 17.5 | 17.3 | 76.3 | 3.0 |
| | | Mercury, Total | 0.18 | 0.02 | 0.16 | 99.4 | 1.0 |
| | | Lead, Total | 52.0 | 12.5 | 43.4 | 91.0 | 3.0 |
| | | Selenium, Total | 134 | 1.6 u | 173 | 77.4 | 3.0 |

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/18/08

CLIENT: WC-HANFORD RC-110 K1325
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0809L086

| SAMPLE | SITE ID | ANALYTE | INITIAL | | | DILUTION FACTOR (REP) |
|---------|---------|-----------------|---------|---------------|------|--------------------------|
| | | | RESULT | REPLICATE RPD | | |
| -001REP | J17HH8 | Silver, Total | 0.27u | 0.28u | NC | 3.0 |
| | | Arsenic, Total | 3.8 | 4.6 | 19.0 | 3.0 |
| | | Barium, Total | 89.1 | 92.1 | 3.3 | 3.0 |
| | | Cadmium, Total | 0.57 | 0.69 | 18.6 | 3.0 |
| | | Chromium, Total | 17.5 | 14.7 | 17.4 | 3.0 |
| | | Mercury, Total | 0.02 | 0.02 | 28.6 | 1.0 |
| | | Lead, Total | 12.5 | 12.6 | 0.80 | 3.0 |
| | | Selenium, Total | 1.6 u | 1.7 u | NC | 3.0 |

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/18/08.

CLIENT: WC-HANFORD RC-110 K1325
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0809L086

| SAMPLE | SITE ID | ANALYTE | SPIKED | SPIKED | UNITS | %RECOV |
|--------|-------------|---------------|--------|--------|-------|--------|
| | | | SAMPLE | AMOUNT | | |
| LCS1 | 08L0336-LC1 | Silver, LCS | 48.6 | 50.0 | MG/KG | 97.2 |
| | | Arsenic, LCS | 941 | 1000 | MG/KG | 94.1 |
| | | Barium, LCS | 484 | 500 | MG/KG | 96.8 |
| | | Cadmium, LCS | 23.8 | 25.0 | MG/KG | 95.2 |
| | | Chromium, LCS | 49.2 | 50.0 | MG/KG | 98.4 |
| | | Lead, LCS | 240 | 250 | MG/KG | 96.2 |
| | | Selenium, LCS | 913 | 1000 | MG/KG | 91.3 |
| LCS1 | 08C0160-LC1 | Mercury, LCS | 4.7 | 4.7 | MG/KG | 100.9 |

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0336
 Date/Time Initiated: 9/15/08 1700
 Date/Time Completed: 9/15/08 2145
 Analyst(s): MM
 Matrix: Soil Water Other: liquid
 Instr. Type: AA ICP
 Parameters: see backing

Method: SW 3005A DW 200.7 (1994)
 (circle) 3010A 200.9
 3015 3113B
 3020A
 7060A (As/Se) MCAWW 200.7 (1982)
 7760A (Ag) 200 (AA)
 206.2 (As/Se)
3050B
 3051 SM 3030C (NC)
 CLP ILMO3.0 Other: tipher
 ILMO4.0

Digested / Undigested (circle one)
 Balance #: 620
 Balance Cal Verif: (Y) NA
 Hot Plate Temp: 91°

MM

| COC Batch # | Spike Vol(s) (mL) | Initial Wt/Vol (g/mL) | Final Vol (mL) | pH <2 | Type: To/So/ TC | Texture | Color/Appearance | Artifact | Turb |
|--------------|-------------------|-----------------------|----------------|-------|-----------------|---------|------------------|----------|------|
| 0809L091-001 | | 1.06 gm | 100 ml | 22 | TO | liquid | from oil | | RMS |
| UD1R | | 1.07 gm | | | | | | | |
| UD1S | 1.0 ml | 1.13 gm | | | | | | | |
| UD2 | | 1.11 gm | | | | | | | |
| UD3 | | 1.02 gm | | | | | | | RMS |
| UD4 | | 1.03 gm | | | | | | | |
| UD5 | | 1.09 gm | | | | | tan milky liquid | | RMS |
| UD6 | | 1.01 gm | | | | | | | |
| 0809L086-001 | | 1.14 gm | | | | fine | brown soil | rocks | RMS |
| UD1R | | 1.10 gm | | | | | | | |
| UD1S | 1.0 ml | 1.17 gm | | | | | | | |
| 0809L086-001 | | 1.21 gm | | | | | | | |
| UD1R | | 1.23 gm | | | | | | | |
| UD1S | 1.0 ml | 1.25 gm | | | | | | | |
| 08L0336-MB) | | 1.00 gm | | | | coarse | biting chips | | |
| LC1 | 1.0 ml | 1.00 gm | | | | | | | |

MM 9/15/08

Spiking IDs:
 MS #: 8100-04-01
02
03
6072-78-07
 LCS #: 08
09
10
11

Reagent IDs:
 HNO₃ G07057
 HCL G26054
 H₂O₂ G15A18
 1:1 HNO₃ 9789-053-08
 1:1 HCL

File ID#: IC033601, IC036
IC033603
 LIMS Transfer: (Y) N
 Data Review By/Date: 9/15/08

* also 0.5 ml 6072-079-13 (2r)

MERCURY PREPARATION

Logbook # 498

Analyst: CA
Date: 9/15/08
Time/Temp: 1815 / 94°
Time/Temp: 1845 / 98°

Instrument ID: HC3.1
Balance #: B29 / NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0160
Worksheet: H6091601
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? Yes NA (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Initial/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

| LvLI Batch # | Container Number | Spike Volume (mL) | Spike Conc. (µg/L) | Initial Wt. or Volume (g or mL) | Final Sample Volume (mL) | Comments, % Solids, etc. |
|--------------|------------------|-------------------|--------------------|---------------------------------|--------------------------|--------------------------|
| Blank | H3 | | | 10mL | 50mL | |
| 0.2 µg/L | 8 | 0.100 | | | | |
| 1.0 | 3VG | 0.500 | | | | |
| 2.0 | 5H | 1.000 | | | | |
| 5.0 | 3C | 2.500 | | | | |
| 10.0 | 41 | 5.000 | | | | |
| ICW | RU | 0.125 | 2.5 | | | |
| CCW | 194 | 0.250 | 5.0 | | | |
| ICB/CCB | C4D | | | | | 90.50L |
| MBI | KX | | | 0.30 | | PBS160 100.0. |
| LCI | CM | * | * | 0.32 | | L |
| 0809L053-001 | 205 | | | 0.35 | | R 99.03 |
| WIR | AP | | | 0.41 | | L |
| WIS | P3 | 0.500 | 1.0 | 0.35 | | L |
| 002 | DX | | | 0.31 | | 99.25 |
| 003 | 114 | | | 0.37 | | L |
| 0809L076-001 | ST | | | 0.31 | | 100.0 |
| WIR | Q12 | | | 0.31 | | |
| WIS | 154 | 0.050 | 10.0 | 0.31 | | |
| W02 | N2 | | | 0.33 | | |
| W03 | 31 | | | 0.32 | | |
| W04 | F8 | | | 0.36 | | |
| W05 | S14 | | | 0.39 | | |
| 0809L086-001 | 537 | | | 0.32 | | R 98.61 |
| WIR | NR | | | 0.36 | | L |
| WIS | 816 | 0.500 | 1.0 | 0.32 | | L |
| 0809L091-001 | TR | | | 0.30 | | 100.00 |

Reviewed By/Date: [Signature] 9/16/08

| Standard: | ID | Prep Date/Time |
|-----------|----------------|----------------|
| CALMS | R1 6072-78-14B | 9/15/08 12:35 |
| CVCCV/LCS | US 6072-78-15A | |

see book # 86Y for std traceability information

W/LCS = US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

MERCURY PREPARATION

Logbook # 498

Analyst: FEA

Instrument ID HG3.1

Prep Batch: 080140

Date 9/15/08

Balance #: B29 / NA

Worksheet: H091601

Start Time/Temp: _____

Pipette Calibration (Daily) Y

SOP No. ME-HgCVAA, Rev. 02

End Time/Temp: see page

pH < 2 for Liquids? Yes NA No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Initial/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

| LvLI Batch # | Container Number | Spike Volume (mL) | Spike Conc. (µg/L) | Initial Wt or Volume (g or mL) | Final Sample Volume (mL) | Comments, % Solids, etc. | |
|--------------|------------------|-------------------|--------------------|--------------------------------|--------------------------|--------------------------|---|
| 08092091-002 | E | | | 0.32 | 50mL | 100. | |
| 002A | 676 | | | 0.33 | | | |
| 002B | 112 | 0.050 | 10.0 | 0.33 | | | |
| 003 | HH | | | 0.30 | | | R |
| 004 | P7 | | | 0.31 | | | |
| 005 | L53 | | | 0.30 | | | R |
| 006 | L2 | | | 0.30 | | | |
| | | | | | | | |

see page 9/15/08

| | |
|--------------|---------------------|
| Standard: ID | Prep Date/Time |
| ICALMS | |
| CVCCV/LCS | <u>see page 020</u> |

Reviewed By/Date: [Signature] 9/16

see book # 9368 for std traceability information

Soil LCS = US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-110-002

Page 1 of 1

Collector
Etherington T.

Project Designation
100-H Burial Grounds Remaining Sites - Soil Quick Turn

Company Contact
Doug Bowers

Telephone No.
509 531-0701

Sampling Location
118-H-5

Project Coordinator
KESSNER, JH

SAF No.
RC-110

Price Code

Data Turnaround
2 DE 8:00 AM 15 day

Ice Chest No.
GKP-03-004 + AFS-04-124

Shipped To
EBERLINE SERVICES LIONVILLE

Field Logbook No.
FL1627

COA
R119H5 2600

Offsite Property No.
A080347

Method of Shipment
Fed Ex

Bill of Lading/Air Bill No.
SEC OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | None |
|---------------------|-------|---------|---------|---------|--------|-------|-------|-------|-------|------|
| Type of Container | aG | aG | aG | aG | P | aG | aG | aG | aG | P |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Volume | 250mL | 250mL | 250mL | 250mL | 1000mL | 250ml | 250mL | 250mL | 250mL | 60mL |

SAMPLE ANALYSIS

| Sample No. | Matrix * | Sample Date | Sample Time | See item (1) in Special Instructions. | PCBs - 8082 | Semi-VOA - 8270A (TCL) | VOA - 8260A (TCL) | See item (2) in Special Instructions. | Iodine-129; Neptunium-237; Technetium-99 | Carbon-14 Low Level; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium; Isotopic Uranium | Gross Alpha; Gross Beta |
|------------|----------|-------------|-------------|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|--|-----------------------------------|--|--------------------------------------|-------------------------|
| 17HH8 | SOIL | 9-4-08 | 0835 | X | X | X | X | | | | | | |

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

| | | | |
|--|--------------------------------------|---|--------------------------------------|
| Relinquished By/Removed From <i>Etherington T.</i> | Date/Time <i>9-4-08 0847</i> | Received By/Stored In <i>Doug Bowers / Doug Bowers</i> | Date/Time <i>9-4-08 / 0847</i> |
| Relinquished By/Removed From <i>Doug Bowers / Doug Bowers</i> | Date/Time <i>9-4-08 / 1615</i> | Received By/Stored In <i>RIF / A 1060 bldg</i> | Date/Time <i>9-4-08 / 1615</i> |
| Relinquished By/Removed From <i>1060/IA</i> | Date/Time <i>SEP 09 2008 1100</i> | Received By/Stored In <i>MST / MST</i> | Date/Time <i>SEP 09 2008 1100</i> |
| Relinquished By/Removed From <i>MST / MST</i> | Date/Time <i>SEP 09 2008 1100</i> | Received By/Stored In <i>Fed Ex</i> | Date/Time <i>SEP 09 2008 1100</i> |
| Relinquished By/Removed From <i>Fed Ex</i> | Date/Time <i>9-10-08 0935</i> | Received By/Stored In <i>[Signature]</i> | Date/Time <i>9-10-08 0935</i> |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

870 8-27-08

(1) ICP Metals - 6010 (Client List) (~~Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc~~); Mercury - 7470 - (CV)
(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238)

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *

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

LABORATORY SECTION

Received By _____ Title _____ Date/Time _____

FINAL SAMPLE DISPOSITION

Disposal Method _____ Disposed By _____ Date/Time _____

000000016

1.124

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hartford RC-110
 Project/SAF/SOW/Release #:

Date: 9/10/08

LvLI Batch #: 0809L086

Sample Custodian: V. Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|--|------------|--|
| 1. Samples Hand Delivered or Shipped? | Carrier | Airbill # | <u>79113340 6270</u> <u>79057304 2920</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 5. Samples received <u>cooled</u> or ambient? | Temp <u>2-4</u> <u>2-1</u> °C | Cooler # | <u>GRP. 03-004</u> <u>AFS. 04-124</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 9. All samples on COC received? All samples received on COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No | | <input checked="" type="checkbox"/> N/A |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes <input type="checkbox"/> No | | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 16. Project Manager contacted concerning any discrepancies? Person Contacted _____ | <input type="checkbox"/> Yes <input type="checkbox"/> No | | <input checked="" type="checkbox"/> N/A |
| | | Date _____ | |



Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-110 K1325



DATE RECEIVED: 09/10/08

LVL LOT # :0809L086

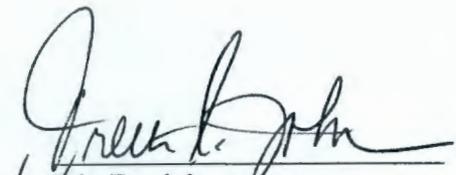
| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|-----------|---------|-----|----------|------------|-----------|----------|
| J17HH8 | 001 | S | 08LE0440 | 09/04/08 | 09/15/08 | 09/16/08 |
| J17HH8 | 001 MS | S | 08LE0440 | 09/04/08 | 09/15/08 | 09/16/08 |
| J17HH8 | 001 MSD | S | 08LE0440 | 09/04/08 | 09/15/08 | 09/17/08 |

LAB QC:

| | | | | | | |
|--------|--------|---|----------|-----|----------|----------|
| SBLKXV | MB1 | S | 08LE0440 | N/A | 09/15/08 | 09/16/08 |
| SBLKXV | MB1 BS | S | 08LE0440 | N/A | 09/15/08 | 09/16/08 |



11. Internal standard area criteria were not met for samples J17HH8 MS and J17HH8 MSD. The analysis of sample J17HH8 fulfills the reanalysis requirement for the out of criteria samples. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC criteria.
12. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
13. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
14. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.


by Jamin Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/23/08
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08MS206

Initiator: Sharon Saylor
 Date: 9-19-08
 Client: WCHashed RC110
K1325

Batch: 0809L086
 Samples: ms, msd, BS
 Method: 82V846MCAWWWICLPI

Parameter: 8270
 Matrix: SOLID
 Prep Batch: 08160440

1. Reason for SDR

- a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C
 Transcription Error Wrong Test Code Other _____
- b. General Discrepancy
 Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible
 Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hold
 Improper Bottle Type Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

- ① No or low recovery of several spike analytes in the ms, msd (possible matrix effects)
- ② low recovery of several spike analytes in the BS

2. Known or Probable Causes(s)

① hydrocarbon contamination, large unresolved chromatographic peak btm 20-30 minutes
 ② Acidic phents are subject to erratic chromatographic behavior especially of the GC system is contaminated with high boiling material - other separate. All surrogates within acceptance criteria.

3. Discussion and Proposed Action

Other Description:

- Re-log
 Entire Batch
 Following Samples: _____
 Re-leach
 Re-extract
 Re-digest
 Revise EDD
 Change Test Code to _____
 Place On/Take Off Hold (circle)

narrate

[Signature] 9/19/08

4. Project Manager Instructions...signature/date:

- Concur with Proposed Action
 Disagree with Proposed Action; See Instruction
 Include in Case Narrative
 Client Contacted:
 Date/Person _____
 Add
 Cancel

[Signature] 9/23/08

5. Final Action...signature/date:

Other Explanation:

- Verified re-[log][leach][extract][digest][analysis] (circle)
 Included in Case Narrative
 Hard Copy COC Revised
 Electronic COC Revised
 EDD Corrections Completed

When Final Action has been recorded, forward original to QA for disposition.

Route

- Lab Manager: Daniels
 ① Project Mgr (circle) Johnson Stone
 Sample Prep (circle): Ford
 Log-in: King

Route

- Metals: Welsh / _____
 Inorganic: Perrone / _____
 GC/LC: Carey / _____
 MS VOA: Rubino / _____
 ② MS BNA: Carden
 Other: _____

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

| Cust ID: | J17HH8 | J17HH8 | J17HH8 | SBLKXV | SBLKXV BS |
|----------------------------|--------|---------|---------|--------------|--------------|
| RFW#: | 001 | 001 MS | 001 MSD | 08LE0440-MB1 | 08LE0440-MB1 |
| 2-Chloronaphthalene | 680 U | 94 % | 73 % | 330 U | 61 % |
| 2-Nitroaniline | 1700 U | 107 % | 88 % | 830 U | 71 % |
| Dimethylphthalate | 680 U | 109 % | 78 % | 330 U | 76 % |
| Acenaphthylene | 680 U | 60 % | 52 * % | 330 U | 63 % |
| 2,6-Dinitrotoluene | 680 U | 66 % | 41 * % | 330 U | 69 % |
| 3-Nitroaniline | 1700 U | 5 * % | 33 * % | 830 U | 72 % |
| Acenaphthene | 680 U | 91 % | 71 % | 330 U | 64 % |
| 2,4-Dinitrophenol | 1700 U | 0 * % | 0 * % | 830 U | 16 * % |
| 4-Nitrophenol | 1700 U | 221 * % | 143 * % | 830 U | 70 % |
| Dibenzofuran | 680 U | 86 % | 65 % | 330 U | 65 % |
| 2,4-Dinitrotoluene | 680 U | 38 * % | 39 * % | 330 U | 69 % |
| Diethylphthalate | 680 U | 109 % | 85 % | 330 U | 80 % |
| 4-Chlorophenyl-phenylether | 680 U | 90 % | 72 % | 330 U | 71 % |
| Fluorene | 680 U | 87 % | 65 % | 330 U | 64 % |
| 4-Nitroaniline | 1700 U | 2 * % | 6 * % | 830 U | 71 % |
| 4,6-Dinitro-2-methylphenol | 1700 U | 0 * % | 0 * % | 830 U | 32 * % |
| N-Nitrosodiphenylamine (1) | 680 U | 85 % | 64 % | 330 U | 63 % |
| 4-Bromophenyl-phenylether | 680 U | 96 % | 75 % | 330 U | 58 % |
| Hexachlorobenzene | 680 U | 85 % | 63 % | 330 U | 62 % |
| Pentachlorophenol | 1700 U | 165 * % | 117 % | 830 U | 40 % |
| Phenanthrene | 680 U | 81 % | 81 % | 330 U | 65 % |
| Anthracene | 680 U | 88 % | 54 * % | 330 U | 68 % |
| Carbazole | 680 U | 113 % | 88 % | 330 U | 70 % |
| Di-n-butylphthalate | 680 U | 192 * % | 130 % | 330 U | 87 % |
| Fluoranthene | 680 U | 128 % | 115 % | 330 U | 70 % |
| Pyrene | 680 U | 57 % | 73 % | 330 U | 73 % |
| Butylbenzylphthalate | 680 U | 128 % | 98 % | 330 U | 95 % |
| 3,3'-Dichlorobenzidine | 680 U | 0 * % | 0 * % | 330 U | 64 % |
| Benzo(a)anthracene | 680 U | 66 % | 57 % | 330 U | 69 % |
| Chrysene | 680 U | 57 % | 83 % | 330 U | 69 % |
| bis(2-Ethylhexyl)phthalate | 680 U | 101 % | 143 % | 27 J | 91 % |
| Di-n-octyl phthalate | 680 U | 98 % | 89 % | 330 U | 85 % |
| Benzo(b)fluoranthene | 680 U | 79 % | 38 * % | 330 U | 65 % |
| Benzo(k)fluoranthene | 680 U | 77 % | 76 % | 330 U | 63 % |
| Benzo(a)pyrene | 680 U | 98 % | 50 % | 330 U | 67 % |
| Indeno(1,2,3-cd)pyrene | 680 U | 88 % | 65 % | 330 U | 68 % |
| Dibenz(a,h)anthracene | 680 U | 96 % | 80 % | 330 U | 70 % |
| Benzo(g,h,i)perylene | 680 U | 73 % | 73 % | 330 U | 69 % |

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

000000009

1F
 SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J17HH8

Lab Name: Lionville Labs, Inc. Work Order: 60049001001

Client: WC-HANFORD RC-110 K1325

Matrix: (soil/water) SOIL

Lab Sample ID: 0809L086-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: C091614

Level: (low/med) LOW

Date Received: 09/10/08

% Moisture: 1 decanted: (Y/N)

Date Extracted: 09/15/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 09/16/08

Injection Volume: 2.0 (uL)

Dilution Factor: 2.00

GPC Cleanup: (Y/N) N

pH:

CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/Kg

Number TICs found: 5

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|--------|------------|----|
| 1. | UNKNOWN | 6.685 | 90000 | JA |
| 2. | UNKNOWN | 6.719 | 30000 | JA |
| 3. | UNKNOWN | 16.244 | 9000 | J |
| 4. | ALKANE | 22.488 | 9000 | J |
| 5. | ALKANE | 35.096 | 20000 | J |

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKXV

Lab Name: Lionville Labs, Inc. Work Order: 60049001001

Client: WC-HANFORD RC-110 K1325

Matrix: (soil/water) SOIL

Lab Sample ID: 08LE0440-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: C091607

Level: (low/med) LOW

Date Received: 09/15/08

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 09/15/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 09/16/08

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 3

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|------------------|-------|------------|----|
| 1. | ALDOL CONDENSATE | 6.067 | 700 | JA |
| 2. | UNKNOWN | 6.695 | 60000 | J |
| 3. | ALDOL CONDENSATE | 8.254 | 100 | JA |

| | | | | | |
|--|--|---|---|----------------------------|-----------------|
| Collector Etherington T. | Company Contact Doug Bowers | Telephone No. 509 531-0701 | Project Coordinator KESSNER, JH | Price Code | Data Turnaround |
| Project Designation 100-H Burial Grounds Remaining Sites - Soil Quick Turn | Sampling Location 118-H-5 | Field Logbook No. EL 1627 | SAF No. RC-110 | 2 DE 8-27-08 15 day | |
| Ice Chest No. GKP-03-004 + AFS-04-124 | Field Logbook No. EL 1627 | COA R119H5 2600 | Method of Shipment Fed Ex | | |
| Shipped To EBERLINE SERVICES (LIONVILLE) | Offsite Property No. A080347 | Bill of Lading/Air Bill No. SFC OFC | | | |

000000013

| Special Handling and/or Storage | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | None |
|---------------------------------|---------------------|-------|---------|---------|---------|--------|-------|-------|-------|-------|------|
| | Type of Container | aG | aG | aG | aG | P | aG | aG | aG | aG | P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volume | 250mL | 250mL | 250mL | 250mL | 1000mL | 250ml | 250mL | 250mL | 250mL | 60mL |

| SAMPLE ANALYSIS | See item (1) in Special Instructions. | PCBs - 8082 | Semi-VOA - 8270A (TCL) | VOA - 8260A (TCL) | See item (2) in Special Instructions. | Iodine-129; Neptunium-237; Technetium-99 | Iodine-129; Neptunium-237; Technetium-99 | Carbon-14 Low Level; Tritium - H3 | Nickel-63; Strontium-89,90 - Total Sr | Isotopic Plutonium; Isotopic Uranium | Gross Alpha; Gross Beta |
|-----------------|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|--|--|-----------------------------------|---------------------------------------|--------------------------------------|-------------------------|
|-----------------|---------------------------------------|-------------|------------------------|-------------------|---------------------------------------|--|--|-----------------------------------|---------------------------------------|--------------------------------------|-------------------------|

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
|------------|----------|-------------|-------------|---|---|---|---|--|--|--|--|
| 117HH8 | SOIL | 9-4-08 | 0835 | X | X | X | X | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | SPECIAL INSTRUCTIONS | Matrix * |
|--|---|--|--|
| Relinquished By/Removed From <i>[Signature]</i> | Received By/Stored In <i>[Signature]</i> | (1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238) 870 8-27-08 Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab. | S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetation X=Other |
| Relinquished By/Removed From <i>[Signature]</i> | Received By/Stored In <i>[Signature]</i> | | |
| Relinquished By/Removed From <i>[Signature]</i> | Received By/Stored In <i>[Signature]</i> | | |
| Relinquished By/Removed From <i>[Signature]</i> | Received By/Stored In <i>[Signature]</i> | | |
| Relinquished By/Removed From <i>[Signature]</i> | Received By/Stored In <i>[Signature]</i> | | |

| | | | |
|--------------------------|-----------------|-------------|-----------|
| LABORATORY SECTION | Received By | Title | Date/Time |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

[Handwritten initials]

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hartford RC-110
 Project/SAF/SOW/Release #:

Date: 9/10/08

LvLI Batch #: 0809L086

Sample Custodian: V. Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|---|--------------------------------------|---|
| 1. Samples Hand Delivered or Shipped? | Carrier | Airbill # | <u>79113340 6270</u> <u>79057304 2920</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 5. Samples received <u>cooled</u> or ambient? | Temp <u>2-4</u> <u>2-1</u> | °C | Cooler # <u>GRP. 03-004</u> <u>AFS. 04-124</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR | <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 12. Samples received within hold times? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | | Date _____ | |

