0079247

# SAF-RC-032
# 100-F Remaining Sites Burial Grounds - Soil Full Protocol
# FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt H4-21 KW 10/31/08
INITIAL/DATE

**COMMENTS:**

**SDG K1385 SAF-RC-032**

Rad only X Chem only Rad & Chem

X Complete Partial

**Waste Site: 600-149**

RECEIVED
NOV 07 2008
EDMC

LvLI
LIONVILLE LABORATORY INC.

27 October 2008

RECEIVED OCT 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 # | 0810L038 |
| SDG # | K1385 |
| SAF # | RC-032 |
| Date Received | 10/03/08 |
| # Samples | 3 |
| Matrix | SOIL |
| Volatiles | |
| Semivolatiles | |
| Pest/PCB | |
| Glycols | |
| DRO/KRO/GRO | |
| GC Alcohols | |
| 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 Incorporated

Orlette S. Johnson
Project Manager
r:\group\pm\orlette\hanford\data\b_ltrs.doc

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-032 K1385

DATE RECEIVED: 10/07/08 LVL LOT # :0810L038

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| J17K34 | | | | | | |
| TCLP | 001 | S | 08LT0104 | 10-06-08 | 10/13/08 | 10/14/08 |
| SILVER, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILVER, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILVER, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ARSENIC, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ARSENIC, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ARSENIC, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BORON, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BORON, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BORON, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BARIUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BARIUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BARIUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BERYLLIUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BERYLLIUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BERYLLIUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CADMIUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CADMIUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CADMIUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COBALT, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COBALT, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COBALT, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CHROMIUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CHROMIUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CHROMIUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COPPER, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COPPER, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COPPER, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MANGANESE, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MANGANESE, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MANGANESE, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MOLYBDENUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MOLYBDENUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MOLYBDENUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| NICKEL, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-032 K1385

DATE RECEIVED: 10/07/08 LVL LOT # :0810L038

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| NICKEL, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| NICKEL, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| LEAD, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| LEAD, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| LEAD, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ANTIMONY, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ANTIMONY, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ANTIMONY, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SELENIUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SELENIUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SELENIUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILICON, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILICON, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILICON, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| TIN, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| TIN, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| TIN, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| VANADIUM, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| VANADIUM, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| VANADIUM, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ZINC, TOTAL | 001 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ZINC, TOTAL | 001 REP | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ZINC, TOTAL | 001 MS | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| J17K35 | | | | | | |
| TCLP | 002 | S | 08LT0104 | 10-06-08 | 10/13/08 | 10/14/08 |
| SILVER, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ARSENIC, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BORON, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BARIUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BERYLLIUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CADMIUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COBALT, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CHROMIUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COPPER, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MANGANESE, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MOLYBDENUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-032 K1385

DATE RECEIVED: 10/07/08 LVL LOT # :0810L038

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| NICKEL, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| LEAD, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ANTIMONY, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SELENIUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILICON, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| TIN, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| VANADIUM, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ZINC, TOTAL | 002 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| J17K36 | | | | | | |
| TCLP | 003 | S | 08LT0104 | 10-06-08 | 10/13/08 | 10/14/08 |
| SILVER, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ARSENIC, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BORON, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BARIUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| BERYLLIUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CADMIUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COBALT, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| CHROMIUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| COPPER, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MANGANESE, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| MOLYBDENUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| NICKEL, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| LEAD, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ANTIMONY, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SELENIUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| SILICON, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| TIN, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| VANADIUM, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |
| ZINC, TOTAL | 003 | S | 08L0370 | 10-06-08 | 10/08/08 | 10/11/08 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| SILVER, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| ARSENIC LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| ARSENIC, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-032 K1385

DATE RECEIVED: 10/07/08 LVL LOT # :0810L038

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| BORON LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| BORON, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| BARIUM LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| BARIUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| BERYLLIUM LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| BERYLLIUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| CADMIUM LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| CADMIUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| COBALT LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| COBALT, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| CHROMIUM LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| CHROMIUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| COPPER LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| COPPER, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| MANGANESE LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| MANGANESE, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| MOLYBDENUM LABORATOR | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| MOLYBDENUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| NICKEL LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| NICKEL, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| LEAD LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| LEAD, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| ANTIMONY LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| ANTIMONY, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| SELENIUM LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| SELENIUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| SILICON LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| SILICON, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| TIN LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| TIN, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| VANADIUM LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| VANADIUM, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |
| ZINC LABORATORY | LC1 BS | S | 08L0370 | N/A | 10/08/08 | 10/12/08 |
| ZINC, TOTAL | MB1 | S | 08L0370 | N/A | 10/08/08 | 10/11/08 |

LIONVILLE LABORATORY INC.

**Analytical Report**

**Client:** WC-HANFORD RC-032
**LVL#:** 0810L038
**SDG/SAF#:** K1385/RC-032

**W.O.#:** 60049-001-001-0001-00
**Date Received:** 10-07-08

## METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) 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 analyses of 3 soil samples. The analysis of 3 TCLP leachates was cancelled per client request.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

   The samples were reported with 2-fold dilutions 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) with the exception of the ending CCV's for various analytes in file TA1011B. The LCS was rerun in file TA1012A.

5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).

6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), 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 with the exception of Silicon at 3.2%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

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 20 pages.

9. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

| Sample ID | Element | PDS Concentration (ppb) | PDS % Recovery |
|---|---|---|---|
| J17K34 | Manganese | 2,000 | 145.7 |
| | Antimony | 200 | 106.7 |
| | Silicon | 4,200 | 107.1 |

11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. 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.

13. LvL 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory

10/24/08
Date

jjw/m10-038

LIONVILLE LABORATORY INC.

# METALS METHOD GLOSSARY

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

Lot#: 0810L038

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A X3050B __3051 __200.7 __SS17
__Other: _____

## Metals Analysis Methods

| | SW846 | | EPA | | STD MTD | EPA OSWR | USATHAMA |
|---|---|---|---|---|---|---|---|
| Aluminum | __6010B | | __200.7 | | | | __99 |
| Antimony | X6010B | __7041 [5] | __200.7 | __204.2 | | | __99 |
| Arsenic | X6010B | __7060A [5] | __200.7 | __206.2 | __3113B | | __99 |
| Barium | X6010B | | __200.7 | | | | __99 |
| Beryllium | X6010B | | __200.7 | | | | __99 |
| Bismuth | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |
| Boron | X6010B | | __200.7 | | | | __99 |
| Cadmium | X6010B | __7131A [5] | __200.7 | __213.2 | | | __99 |
| Calcium | __6010B | | __200.7 | | | | __99 |
| Chromium | X6010B | __7191 [5] | __200.7 | __218.2 | | | __SS17 |
| Cobalt | X6010B | | __200.7 | | | | __99 |
| Copper | X6010B | __7211 [5] | __200.7 | __220.2 | | | __99 |
| Iron | __6010B | | __200.7 | | | | __99 |
| Lead | X6010B | __7421 [5] | __200.7 | __239.2 | __3113B | | __99 |
| Lithium | __6010B | __7430 [4] | __200.7 | | | __1620 | __99 |
| Magnesium | __6010B | | __200.7 | | | | __99 |
| Manganese | X6010B | | __200.7 | | | | __99 |
| Mercury | __7470A [3] | __7471A [3] | __245.1 [2] | __245.5 [2] | | | __99 |
| Molybdenum | X6010B | | __200.7 | | | | __99 |
| Nickel | X6010B | | __200.7 | | | | __99 |
| Potassium | __6010B | __7610 [4] | __200.7 | __258.1 [4] | | | __99 |
| Rare Earths | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |
| Selenium | X6010B | __7740 [5] | __200.7 | __270.2 | __3113B | | __99 |
| Silicon | __6010B [1] | | __200.7 | | | __1620 | __99 |
| Silica | __6010B | | __200.7 | | | __1620 | __99 |
| Silver | X6010B | __7761 [5] | __200.7 | __272.2 | | | __99 |
| Sodium | __6010B | __7770 [4] | __200.7 | __273.1 [4] | | | __99 |
| Strontium | __6010B | | __200.7 | | | | __99 |
| Thallium | __6010B | __7841 [5] | __200.7 | __279.2 | __200.9 | | __99 |
| Tin | X6010B | | __200.7 | | | | __99 |
| Titanium | __6010B | | __200.7 | | | | __99 |
| Uranium | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |
| Vanadium | X6010B | | __200.7 | | | | __99 |
| Zinc | X6010B | | __200.7 | | | | __99 |
| Zirconium | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |

Other:_____ Method:_____

L-WI-033/M-03/01
000000007

# 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 10/20/08

CLIENT: WC-HANFORD RC-032 K1385

WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0810L038

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | J17K34 | Silver, Total | 0.13 u | MG/KG | 0.13 | 2.0 |
| | | Arsenic, Total | 3.7 | MG/KG | 0.63 | 2.0 |
| | | Boron, Total | 0.95 | MG/KG | 0.63 | 2.0 |
| | | Barium, Total | 81.4 | MG/KG | 0.13 | 2.0 |
| | | Beryllium, Total | 0.06 u | MG/KG | 0.06 | 2.0 |
| | | Cadmium, Total | 0.19 | MG/KG | 0.06 | 2.0 |
| | | Cobalt, Total | 7.9 | MG/KG | 0.25 | 2.0 |
| | | Chromium, Total | 11.0 | MG/KG | 0.25 | 2.0 |
| | | Copper, Total | 17.4 | MG/KG | 0.25 | 2.0 |
| | | Manganese, Total | 344 | MG/KG | 0.05 | 2.0 |
| | | Molybdenum, Total | 0.46 | MG/KG | 0.38 | 2.0 |
| | | Nickel, Total | 12.5 | MG/KG | 0.25 | 2.0 |
| | | Lead, Total | 48.5 | MG/KG | 0.38 | 2.0 |
| | | Antimony, Total | 0.38 u | MG/KG | 0.38 | 2.0 |
| | | Selenium, Total | 0.76 u | MG/KG | 0.76 | 2.0 |
| | | Silicon, Total | 377 | MG/KG | 5.1 | 2.0 |
| | | Tin, Total | 0.76 u | MG/KG | 0.76 | 2.0 |
| | | Vanadium, Total | 53.7 | MG/KG | 0.18 | 2.0 |
| | | Zinc, Total | 50.1 | MG/KG | 0.76 | 2.0 |

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/20/08

CLIENT: WC-HANFORD RC-032 K1385

LVL LOT #: 0810L038

WORK ORDER: 60049-001-001-0001-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -002 | J17K35 | Silver, Total | 0.13 u | MG/KG | 0.13 | 2.0 |
| | | Arsenic, Total | 1.6 | MG/KG | 0.64 | 2.0 |
| | | Boron, Total | 1.2 | MG/KG | 0.64 | 2.0 |
| | | Barium, Total | 63.6 | MG/KG | 0.13 | 2.0 |
| | | Beryllium, Total | 0.06 u | MG/KG | 0.06 | 2.0 |
| | | Cadmium, Total | 0.27 | MG/KG | 0.06 | 2.0 |
| | | Cobalt, Total | 10.9 | MG/KG | 0.26 | 2.0 |
| | | Chromium, Total | 6.8 | MG/KG | 0.26 | 2.0 |
| | | Copper, Total | 30.7 | MG/KG | 0.26 | 2.0 |
| | | Manganese, Total | 264 | MG/KG | 0.05 | 2.0 |
| | | Molybdenum, Total | 0.61 | MG/KG | 0.38 | 2.0 |
| | | Nickel, Total | 17.4 | MG/KG | 0.26 | 2.0 |
| | | Lead, Total | 153 | MG/KG | 0.38 | 2.0 |
| | | Antimony, Total | 0.54 | MG/KG | 0.38 | 2.0 |
| | | Selenium, Total | 0.77 u | MG/KG | 0.77 | 2.0 |
| | | Silicon, Total | 328 | MG/KG | 5.1 | 2.0 |
| | | Tin, Total | 0.77 u | MG/KG | 0.77 | 2.0 |
| | | Vanadium, Total | 44.7 | MG/KG | 0.18 | 2.0 |
| | | Zinc, Total | 43.8 | MG/KG | 0.77 | 2.0 |

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/20/08

CLIENT: WC-HANFORD RC-032 K1385

LVL LOT #: 0810L038

WORK ORDER: 60049-001-001-0001-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -003 | J17K36 | Silver, Total | 0.12 u | MG/KG | 0.12 | 2.0 |
| | | Arsenic, Total | 1.6 | MG/KG | 0.58 | 2.0 |
| | | Boron, Total | 1.8 | MG/KG | 0.58 | 2.0 |
| | | Barium, Total | 63.5 | MG/KG | 0.12 | 2.0 |
| | | Beryllium, Total | 0.06 u | MG/KG | 0.06 | 2.0 |
| | | Cadmium, Total | 0.28 | MG/KG | 0.06 | 2.0 |
| | | Cobalt, Total | 10.9 | MG/KG | 0.23 | 2.0 |
| | | Chromium, Total | 7.5 | MG/KG | 0.23 | 2.0 |
| | | Copper, Total | 31.7 | MG/KG | 0.23 | 2.0 |
| | | Manganese, Total | 279 | MG/KG | 0.05 | 2.0 |
| | | Molybdenum, Total | 0.52 | MG/KG | 0.35 | 2.0 |
| | | Nickel, Total | 18.9 | MG/KG | 0.23 | 2.0 |
| | | Lead, Total | 97.6 | MG/KG | 0.35 | 2.0 |
| | | Antimony, Total | 0.35 u | MG/KG | 0.35 | 2.0 |
| | | Selenium, Total | 0.70 u | MG/KG | 0.70 | 2.0 |
| | | Silicon, Total | 468 | MG/KG | 4.6 | 2.0 |
| | | Tin, Total | 0.77 | MG/KG | 0.70 | 2.0 |
| | | Vanadium, Total | 41.5 | MG/KG | 0.16 | 2.0 |
| | | Zinc, Total | 46.2 | MG/KG | 0.70 | 2.0 |

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/20/08

CLIENT: WC-HANFORD RC-032 K1385 LVL LOT #: 0810L038

WORK ORDER: 60049-001-001-0001-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| BLANK1 | 08L0370-MB1 | Silver, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Arsenic, Total | 0.50 u | MG/KG | 0.50 | 1.0 |
| | | Boron, Total | 0.50 u | MG/KG | 0.50 | 1.0 |
| | | Barium, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Beryllium, Total | 0.05 u | MG/KG | 0.05 | 1.0 |
| | | Cadmium, Total | 0.05 u | MG/KG | 0.05 | 1.0 |
| | | Cobalt, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Chromium, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Copper, Total | 0.27 | MG/KG | 0.20 | 1.0 |
| | | Manganese, Total | 0.30 | MG/KG | 0.04 | 1.0 |
| | | Molybdenum, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Nickel, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Lead, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Antimony, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Selenium, Total | 0.60 u | MG/KG | 0.60 | 1.0 |
| | | Silicon, Total | 4.3 | MG/KG | 4.0 | 1.0 |
| | | Tin, Total | 0.71 | MG/KG | 0.60 | 1.0 |
| | | Vanadium, Total | 0.14 u | MG/KG | 0.14 | 1.0 |
| | | Zinc, Total | 0.60 u | MG/KG | 0.60 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/20/08

CLIENT: WC-HANFORD RC-032 K1385 LVL LOT #: 0810L038

WORK ORDER: 60049-001-001-0001-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR(SPK) |
|---|---|---|---|---|---|---|---|
| -001 | J17K34 | Silver, Total | 2.8 | 0.13u | 3.0 | 93.3 | 2.0 |
| | | Arsenic, Total | 110 | 3.7 | 119 | 88.6 | 2.0 |
| | | Boron, Total | 52.8 | 0.95 | 59.7 | 86.8 | 2.0 |
| | | Barium, Total | 193 | 81.4 | 119 | 93.8 | 2.0 |
| | | Beryllium, Total | 2.5 | 0.06u | 3.0 | 83.3 | 2.0 |
| | | Cadmium, Total | 2.9 | 0.19 | 3.0 | 90.3 | 2.0 |
| | | Cobalt, Total | 35.1 | 7.9 | 29.9 | 91.0 | 2.0 |
| | | Chromium, Total | 22.4 | 11.0 | 11.9 | 95.8 | 2.0 |
| | | Copper, Total | 32.9 | 17.4 | 14.9 | 104.0 | 2.0 |
| | | Manganese, Total | 356 | 344 | 29.9 | 37.8* | 2.0 |
| | | Molybdenum, Total | 53.3 | 0.46 | 59.7 | 88.5 | 2.0 |
| | | Nickel, Total | 39.3 | 12.5 | 29.9 | 89.6 | 2.0 |
| | | Lead, Total | 76.8 | 48.5 | 29.9 | 94.6 | 2.0 |
| | | Antimony, Total | 9.3 | 0.38u | 29.9 | 31.1 | 2.0 |
| | | Selenium, Total | 105 | 0.76u | 119 | 87.9 | 2.0 |
| | | Silicon, Total | 282 | 377 | 59.7 | -160. * | 2.0 |
| | | Tin, Total | 52.3 | 0.76u | 59.7 | 87.6 | 2.0 |
| | | Vanadium, Total | 80.1 | 53.7 | 29.9 | 88.3 | 2.0 |
| | | Zinc, Total | 77.9 | 50.1 | 29.9 | 93.0 | 2.0 |

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/20/08

CLIENT: WC-HANFORD RC-032 K1385 LVL LOT #: 0810L038

WORK ORDER: 60049-001-001-0001-00

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR(REP) |
|---|---|---|---|---|---|---|
| -001REP | J17K34 | Silver, Total | 0.13u | 0.13u | NC | 2.0 |
| | | Arsenic, Total | 3.7 | 3.7 | 0.00 | 2.0 |
| | | Boron, Total | 0.95 | 0.73 | 26.9 | 2.0 |
| | | Barium, Total | 81.4 | 79.6 | 2.2 | 2.0 |
| | | Beryllium, Total | 0.06u | 0.06u | NC | 2.0 |
| | | Cadmium, Total | 0.19 | 0.22 | 14.2 | 2.0 |
| | | Cobalt, Total | 7.9 | 8.0 | 1.3 | 2.0 |
| | | Chromium, Total | 11.0 | 10.9 | 0.91 | 2.0 |
| | | Copper, Total | 17.4 | 16.9 | 2.9 | 2.0 |
| | | Manganese, Total | 344 | 335 | 2.8 | 2.0 |
| | | Molybdenum, Total | 0.46 | 0.38u | ~~NC~~ 200 | 2.0 |
| | | Nickel, Total | 12.5 | 12.2 | 2.4 | 2.0 |
| | | Lead, Total | 48.5 | 43.8 | 10.2 | 2.0 |
| | | Antimony, Total | 0.38u | 0.38u | NC | 2.0 |
| | | Selenium, Total | 0.76u | 0.76u | NC | 2.0 |
| | | Silicon, Total | 377 | 252 | 39.8 | 2.0 |
| | | Tin, Total | 0.76u | 0.76u | NC | 2.0 |
| | | Vanadium, Total | 53.7 | 52.6 | 2.1 | 2.0 |
| | | Zinc, Total | 50.1 | 49.8 | 0.60 | 2.0 |

corrected value
MW 10/22/08

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/20/08

CLIENT: WC-HANFORD RC-032 K1385 LVL LOT #: 0810L038

WORK ORDER: 60049-001-001-0001-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 08L0370-LC1 | Silver, LCS | 47.4 | 50.0 | MG/KG | 94.8 |
| | | Arsenic, LCS | 890 | 1000 | MG/KG | 89.0 |
| | | Boron, LCS | 436 | 500 | MG/KG | 87.1 |
| | | Barium, LCS | 471 | 500 | MG/KG | 94.1 |
| | | Beryllium, LCS | 23.4 | 25.0 | MG/KG | 93.6 |
| | | Cadmium, LCS | 22.6 | 25.0 | MG/KG | 90.4 |
| | | Cobalt, LCS | 229 | 250 | MG/KG | 91.7 |
| | | Chromium, LCS | 46.9 | 50.0 | MG/KG | 93.8 |
| | | Copper, LCS | 118 | 125 | MG/KG | 94.1 |
| | | Manganese, LCS | 72.1 | 75.0 | MG/KG | 96.1 |
| | | Molybdenum, LCS | 457 | 500 | MG/KG | 91.4 |
| | | Nickel, LCS | 186 | 200 | MG/KG | 92.8 |
| | | Lead, LCS | 228 | 250 | MG/KG | 91.3 |
| | | Antimony, LCS | 282 | 300 | MG/KG | 93.8 |
| | | Selenium, LCS | 932 | 1000 | MG/KG | 93.2 |
| | | Silicon, LCS | 16.0 | 500 | MG/KG | 3.2 |
| | | Tin, LCS | 461 | 500 | MG/KG | 92.1 |
| | | Vanadium, LCS | 237 | 250 | MG/KG | 94.8 |
| | | Zinc, LCS | 93.4 | 100 | MG/KG | 93.4 |

# SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0370
Date/Time Initiated: 10/8/08 1230
Date/Time Completed: 10/8/08 2215
Analyst(s): M
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: Lee Lockley

(Digested) / Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 98°

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

TM

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| 0810L032-001 | | 1.62 gm | 100 ml | <2 | TO | fine | brown soil | N/A | |
| 001R | | 1.67 gm | | | | | | | |
| 001S | 1.0 ml | 1.67 gm | | | | | | | |
| 002 | | 1.71 gm | | | | | | | |
| 003 | | 1.81 gm | | | | | | | |
| 004 | | 1.72 gm | | | | | | vegetation | |
| 005 | | 1.73 gm | | | | | | | |
| 006 | | 1.82 gm | | | | | | N/A | |
| 007 | | 1.74 gm | | | | | | vegetation | |
| 008 | | 1.65 gm | | | | | | | |
| 009 | | 1.58 gm | | | | | | N/A | |
| 010 | | 1.60 gm | | | | | | | |
| 011 | | 1.60 gm | | | | | | | |
| 012 | | 1.67 gm | | | | | | | |
| 013 | | 1.71 gm | | | | | | | |
| 014 | | 1.74 gm | | | | | | vegetation | |
| 015 | | 1.68 gm | | | | | | | |
| 016 | | 1.69 gm | | | | coarse | Ottawa sand | N/A | |
| 017 | | 1.58 gm | | | | fine | brown soil | vegetation | |
| 0810L038-001 | | 1.64 gm | | | | | | roots | |
| 001R | | 1.65 gm | | | | | | | |
| 001S | 1.0 ml | 1.74 gm | | | | | | | |
| 002 | | 1.58 gm | | | | coarse | | veg/roots | |
| 003 | | 1.75 gm | | | | | | | |

Spiking IDs:
MS #: 8100-04-04
05
06
6072-78-07
LCS #: 08
09
10
11

Reagent IDs:
$HNO_3$ G11022
HCL G26054
$H_2O_2$ G15A18
1:1 $HNO_3$ 9789-086-06
1:1 HCL

File ID#: IC03701 IC03702
LIMS Transfer: (Y) N updated
Data Review By/Date: 10/13/08

# SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0370
Date/Time Initiated:
Date/Time Completed:
Analyst(s):
Matrix: Soil Water Other:
Instr. Type: AA ICP
Parameters:

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

Method: SW (circle)

| | | | |
|---|---|---|---|
| | 3005A | DW | 200.7 (1994) |
| | 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 | |
| | ILMO4.0 | | |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| 08L0370-MB1 | | 1.0g | 100mL | <2 | TO | coarse | boiling chips | | |
| LCS | 1.0mL | 1.0g | 1 | 1 | 1 | 1 | 1 | | |

MW 10/8/08

Spiking IDs:
MS #:
LCS #:

Reagent IDs:
$HNO_3$
HCL
$H_2O_2$
1:1 $HNO_3$
1:1 HCL

File ID#:
LIMS Transfer: Y N
Data Review By/Date: 10/13/08

Lionville Laboratory Use Only

0810L038

# Custody Transfer Record/Lab Work Request

Page 1 of 1

**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

LVLI LIONVILLE LABORATORIES, INC.

000000018

Client W.C. HANFORD SAF# RC-032

Est. Final Proj. Sampling Date

Project# 60049-001-001-0001-00

Project Contact/Phone#

Lionville Laboratory Project Manager O. JOHNSON

QC SW846 Del STD TAT 3Day

Date Rec'd 10-7-08 Date Due 10-10-08

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | A | | | | | | | | | |
| #/Type Container | ~~Liquid~~ Solid | | | | | | | | | 3 | | | | | | | | | |
| | | | | | | | | | | 16 | | | | | | | | | |
| Volume | | | | | | | | | | 250 | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | | INORG | | TCL | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | | Metal | CN | | | | | | | | |

MATRIX CODES:
S- Soil
SE- Sediment
SO- Solid
SL- Sludge
W- Water
A- Air
DS- Drum Solids
DL- Drum Liquids
EP/TCLP Leachate
WI- Wipe
O- Other
F- Fish

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | Lionville Laboratory Use Only | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | J17K34 | | | Soil | 10/6/08 | 0957 | | | | | | | | | | X | | X | | | |
| 002 | J17K35 | | | | | 1003 | | | | | | | | | | X | | X | | | |
| 003 | J17K36 | | | | | 1007 | | | | | | | | | | X | | X | | | |
| 004 | 34 TCLP of 001 | | | | * | | | | | | | | | | | | | | cancel | X | |
| 005 | 35 002 | | | | | | | | | | | | | | | | | | | X | |
| 006 | 36 003 | | | | | | | | | | | | | | | | | | | X | |

Special Instructions: * See Lab chron
Met ① = Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Ag, V, Zn, Sn
Met ② = Same as above, Leachates
Run matrix QC

Special Instructions:
10-16-08 1. per Client cancel Leachates.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [signature] | [signature] | 10/7/08 | 0940 |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| ORIGINAL REWRITTEN | | "COMPOSITE WASTE" | |

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | RC-107-RC-003 | Page 1 of 1 |
|---|---|---|---|---|
| Collector Tony ~~Welch-Koelling~~ Etherington | Company Contact Doug Bowers | Telephone No. 509 531-0701 | Project Coordinator KESSNER, JH | Price Code / Data Turnaround: 24hr |
| Project Designation 100-H Remaining Sites Burial Grounds - Soil Full Protocol | Sampling Location 600-149 | | SAF No. ~~RC-107~~ RC-032 | |
| Ice Chest No. | Field Logbook No. EL 1627 | COA R601492000 | Method of Shipment FED EX | |
| Shipped To EBERLINE SERVICES / LIONVILLE | Offsite Property No. | | Bill of Lading/Air Bill No. | |

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | None | | | | | | | | | | |
| Type of Container | aG | aG | | | | | | | | | | |
| No. of Container(s) | 1 | 1 | | | | | | | | | | |
| Volume | 250mL | 250ml | | | | | | | | | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | ICP TCLP 1311/6010 see below | | | | | | | | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
| J17K34 | SOIL | 10-6-08 | 0957 | X | X | | | | | | | |
| J17K35 | SOIL | 10-6-08 | 1003 | X | X | | | | | | | |
| J17K36 | SOIL | 10-6-08 | 1007 | X | X | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | |
|---|---|---|
| Relinquished By/Removed From | Date/Time 10-6-08 1012 | Received By/Stored In: Doug Bowers/Doug Bowers | Date/Time 10-6-08/1012 |
| Relinquished By/Removed From: Doug Bowers/Doug Bowers | Date/Time 10-6-08/1050 | Received By/Stored In: RIF 24 1060 Bldg | Date/Time 10-6-08/1050 |
| Relinquished By/Removed From: Ref CA/J.E. Bernhard | Date/Time 1130 10-6-08 | Received By/Stored In: J.E. Bernhard | Date/Time 1130 10-6-08 |
| Relinquished By/Removed From: J.E. Bernhard | Date/Time 1145 10-6-08 | Received By/Stored In: FED EX | Date/Time |
| Relinquished By/Removed From: FED EX | Date/Time 10-7-08 0940 | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

SPECIAL INSTRUCTIONS

Staging pile samples

(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); ICP Metals - 6010 (Client List) and tin

Run TCLP extract on same metals as above & hold analysis of extract. Contact Joan Kessner

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=Odor

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

CH-EE-011

000000019

Lionville Laboratory Incorporated

# SAMPLE RECEIPT CHECKLIST (SRC)

**CLIENT:** W.C HANFORD **Date:** 10/7/08

Project/SAP/SOW/Release #: RC-032

**LvLI Batch #:** 0810L039 **Sample Custodian:** Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|---|---|---|
| 1. Samples Hand Delivered or Shipped? | Carrier FED EX | | Airbill # 7911 5597 9641 |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | ☑ Yes | ☐ No | ☐ No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | ☑ Yes | ☐ No | *Comments:* |
| 4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible? | ☑ Yes | ☐ No | |
| 5. Samples received cooled or ambient? | Temp 2.4° | °C | Cooler # ERC-9%-069 |
| How was the temperature taken? | ☑ IR | ☐ Temp. Blank | ☐ Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | ☑ Yes | ☐ No | |
| 6. Custody seals on sample containers intact, signed and dated? | ☑ Yes | ☐ No | ☐ No Seals |
| 7. COC (Client & LvLI) signed & dated? | ☑ Yes | ☐ No | |
| 8. Sample containers are intact? | ☑ Yes | ☐ No | |
| 9. All samples on COC received? | ☑ Yes | ☐ No | |
| All samples received on COC? | ☑ Yes | ☐ No | |
| 10. All sample label information matches COC? | ☑ Yes | ☐ No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | ☑ Yes | ☐ No | |
| 12. Samples received within hold times? | ☑ Yes | ☐ No | |
| Short holds taken to wet lab? | ☐ Yes | ☐ No | ☑ N/A |
| 13. VOA, TOC, TOX free of headspace? | ☐ Yes | ☐ No | ☑ N/A |
| 14. QC stickers placed on bottles designated by client? | ☐ Yes | ☐ No | ☑ 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.) | ☑ Yes | ☐ No | |
| 16. Project Manager contacted concerning any discrepancies? | ☐ Yes | ☐ No | ☑ N/A |

Person Contacted _____ Date _____

LvLI