

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

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21

KW 11/10/08
INITIAL/DATE

COMMENTS:

SDG K1364

SAF-RC-110

Rad only

Chem only

Rad & Chem

Complete

Partial

Waste Site: 118-H-5

RECEIVED
NOV 13 2008
EDMC



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EBERLINE ANALYTICAL CORPORATION

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October 16, 2008

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

RECEIVED
OCT 2008

Reference: **P.O. #S00W235A00**
Eberline Services R8-10-025-7710, SDG K1364

Dear Ms. Kessner:

Enclosed is the data report for one solid (soil) sample designated under SAF No. RC-110 received at Eberline Services on October 2, 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/njv

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1364 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 October 14, 2008.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analysis

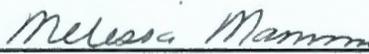
No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

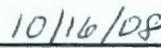
No problems were encountered during the course of the analyses.

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 K1364

SDG 7710
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1364

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

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Prepared by

Melissa C. Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 10/14/08

SDG 7710
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1364

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

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 10/14/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1364

SDG 7710
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1364

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

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
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Report date 10/14/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

SDG 7710
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1364

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R810025-01	J17JF9	118-H-5	SOLID		RC-110	RC-110-004	09/24/08 12:25
R810025-02	Lab Control Sample		SOLID		RC-110		
R810025-03	Method Blank		SOLID		RC-110		
R810025-04	Duplicate (R810025-01)	118-H-5	SOLID		RC-110		09/24/08 12:25

LAB SUMMARY

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SUMMARY DATA SECTION

Page 3

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/14/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

SDG 7710
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1364

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7710	RC-110-004	J17JF9	SOLID	99.4	1294 g		10/02/08	8	R810025-01	7710-001
		Method Blank	SOLID						R810025-03	7710-003
		Lab Control Sample	SOLID						R810025-02	7710-002
		Duplicate (R810025-01)	SOLID	99.4	1294 g		10/02/08	8	R810025-04	7710-004

Lab id EBRLNE
 Protocol Hanford1
 Versior Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 10/14/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

SDG 7710
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1364

TEST MATRIX	METHOD		PREPARATION ERROR			PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT MORE	RE	BLANK	LCS	DUP/ORIG MS/ORIG	
Alpha Spectroscopy										
PU	SOLID	Plutonium, Isotopic in Solids	6174-011	8.0	1		1	1	1/1	
U	SOLID	Uranium, Isotopic in Solids	6174-011	8.0	1		1	1	1/1	
Gamma Spectroscopy										
GAM	SOLID	Gamma Scan	6174-011	7.0	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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

SDG 7710
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1364

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION	MATRIX			SUF-					
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
R810025-01	J17JF9		7710-001	GAM		10/09/08	10/13/08	CSS	Gamma Scan	
09/24/08	118-H-5	SOLID	7710-001	PU		10/10/08	10/10/08	BW	Plutonium, Isotopic in Solids	
10/02/08	RC-110-004	RC-110	7710-001	U		10/10/08	10/10/08	BW	Uranium, Isotopic in Solids	
R810025-02	Lab Control Sample		7710-002	GAM		10/11/08	10/13/08	CSS	Gamma Scan	
		SOLID	7710-002	PU		10/10/08	10/10/08	BW	Plutonium, Isotopic in Solids	
		RC-110	7710-002	U		10/10/08	10/10/08	BW	Uranium, Isotopic in Solids	
R810025-03	Method Blank		7710-003	GAM		10/08/08	10/13/08	CSS	Gamma Scan	
		SOLID	7710-003	PU		10/10/08	10/10/08	BW	Plutonium, Isotopic in Solids	
		RC-110	7710-003	U		10/10/08	10/10/08	BW	Uranium, Isotopic in Solids	
R810025-04	Duplicate (R810025-01)		7710-004	GAM		10/08/08	10/13/08	CSS	Gamma Scan	
09/24/08	118-H-5	SOLID	7710-004	PU		10/10/08	10/10/08	BW	Plutonium, Isotopic in Solids	
10/02/08		RC-110	7710-004	U		10/10/08	10/10/08	BW	Uranium, Isotopic in Solids	

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
GAM	RC-110	Gamma Scan	GAMMA_GS	1			1	1	1		4
PU	RC-110	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
U	RC-110	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	1			1	1	1		4
TOTALS				3			3	3	3		12

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/14/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1364

7710-003

Method Blank

METHOD BLANK

SDG <u>7710</u>	Client/Case no <u>Hanford</u>	SDG <u>K1364</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
Lab sample id <u>R810025-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7710-003</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
Uranium 233/234	U-233/234	0	0.060	0.229	1.00	U	U
Uranium 235	15117-96-1	0	0.073	0.278	1.00	U	U
Uranium 238	U-238	0.030	0.060	0.229	1.00	U	U
Plutonium 238	13981-16-3	0.016	0.064	0.153	1.00	U	PU
Plutonium 239/240	PU-239/240	0.016	0.064	0.122	1.00	U	PU
Potassium 40	13966-00-2	U		0.218		U	GAM
Cobalt 60	10198-40-0	U		0.014	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.100	U	GAM
Radium 226	13982-63-3	U		0.042	0.100	U	GAM
Radium 228	15262-20-1	U		0.048	0.200	U	GAM
Europium 152	14683-23-9	U		0.031	0.100	U	GAM
Europium 154	15585-10-1	U		0.029	0.100	U	GAM
Europium 155	14391-16-3	U		0.035	0.100	U	GAM
Thorium 228	14274-82-9	U		0.022		U	GAM
Thorium 232	TH-232	U		0.048		U	GAM
Uranium 235	15117-96-1	U		0.053		U	GAM
Uranium 238	U-238	U		1.09		U	GAM
Americium 241	14596-10-2	U		0.039		U	GAM
Silver 108m	14391-65-2	U		0.008		U	GAM
Barium 133	13981-41-4	U		0.014		U	GAM

100H BurialGroundsRemainSites-SoilQT

QC-BLANK #67563

METHOD BLANKS

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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>10/14/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

7710-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7710</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R810025-02</u> Dept sample id <u>7710-002</u>	Client/Case no <u>Hanford</u> SDG <u>K1364</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
Uranium 233/234	5.36	0.89	0.509	1.00	U	5.58	0.22	96	73-127	80-120
Uranium 235	3.93	0.77	0.225	1.00	U	4.52	0.18	87	72-128	80-120
Uranium 238	5.07	0.83	0.479	1.00	U	6.04	0.24	84	76-124	80-120
Plutonium 238	4.96	0.84	0.319	1.00	PU	5.84	0.23	85	75-125	80-120
Plutonium 239/240	6.26	0.99	0.221	1.00	PU	6.60	0.26	95	74-126	80-120
Cobalt 60	0.323	0.041	0.028	0.050	GAM	0.343	0.014	94	79-121	80-120
Cesium 137	0.452	0.040	0.027	0.100	GAM	0.387	0.015	117	79-121	80-120

100H BurialGroundsRemainSites-SoilQT

QC-LCS #67562

Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>10/14/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

7710-004

J17JF9

DUPLICATE

SDG <u>7710</u>		Client/Case no <u>Hanford</u>	SDG <u>K1364</u>
Contact <u>Melissa C. Mannion</u>		Contract <u>No. S00W235A00</u>	
DUPLICATE	ORIGINAL	Client sample id <u>J17JF9</u>	
Lab sample id <u>R810025-04</u>	Lab sample id <u>R810025-01</u>	Location/Matrix <u>118-H-5</u>	<u>SOLID</u>
Dept sample id <u>7710-004</u>	Dept sample id <u>7710-001</u>	Collected/Weight <u>09/24/08 12:25</u>	<u>1294 g</u>
	Received <u>10/02/08</u>	Custody/SAF No <u>RC-110-004</u>	<u>RC-110</u>
% solids <u>99.4</u>	% solids <u>99.4</u>		

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	%
Uranium 233/234	0.656	0.27	0.201	1.00		U	0.530	0.23	0.214	21	91	0.7
Uranium 235	0	0.064	0.243	1.00	U	U	0	0.068	0.258	U	-	0
Uranium 238	0.341	0.21	0.201	1.00		U	0.307	0.17	0.214	10	126	0.2
Plutonium 238	0	0.068	0.189	1.00	U	PU	0.101	0.20	0.322	U	-	1.0
Plutonium 239/240	0.017	0.068	0.131	1.00	U	PU	-0.034	0.067	0.257	U	-	1.1
Potassium 40	15.0	1.1	0.515			GAM	14.6	0.64	0.282	3	20	0.4
Cobalt 60	U		0.050	0.050	U	GAM	U		0.027	U	-	0.8
Cesium 137	U		0.053	0.100	U	GAM	U		0.031	U	-	0.7
Radium 226	0.539	0.098	0.096	0.100		GAM	0.500	0.051	0.048	8	35	0.6
Radium 228	0.840	0.19	0.180	0.200		GAM	0.834	0.12	0.106	1	43	0.1
Europium 152	U		<u>0.110</u>	0.100	U	GAM	U		0.059	U	-	0.8
Europium 154	U		<u>0.154</u>	0.100	U	GAM	U		0.091	U	-	0.7
Europium 155	U		<u>0.134</u>	0.100	U	GAM	U		0.098	U	-	0.4
Thorium 228	0.800	0.061	0.059			GAM	0.677	0.035	0.031	17	21	2.4
Thorium 232	0.840	0.19	0.180			GAM	0.834	0.12	0.106	1	43	0.1
Uranium 235	U		0.186		U	GAM	U		0.094	U	-	0.9
Uranium 238	U		5.44		U	GAM	U		3.48	U	-	0.6
Americium 241	U		0.347		U	GAM	U		0.039	U	-	1.8
Silver 108m	U		0.034		U	GAM	U		0.018	U	-	0.8
Barium 133	U		0.053		U	GAM	U		0.026	U	-	0.9

100H BurialGroundsRemainSites-SoilQT

QC-DUP#1 67564

DUPLICATES

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SUMMARY DATA SECTION

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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>10/14/08</u>

DATA SHEET

SDG <u>7710</u>	Client/Case no <u>Hanford</u>	SDG <u>K1364</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R810025-01</u>	Client sample id <u>J17JF9</u>	
Dept sample id <u>7710-001</u>	Location/Matrix <u>118-H-5</u>	<u>SOLID</u>
Received <u>10/02/08</u>	Collected/Weight <u>09/24/08 12:25</u> <u>1294 g</u>	
% solids <u>99.4</u>	Custody/SAF No <u>RC-110-004</u>	<u>RC-110</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.530	0.23	0.214	1.00		U
Uranium 235	15117-96-1	0	0.068	0.258	1.00	U	U
Uranium 238	U-238	0.307	0.17	0.214	1.00		U
Plutonium 238	13981-16-3	0.101	0.20	0.322	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.034	0.067	0.257	1.00	U	PU
Potassium 40	13966-00-2	14.6	0.64	0.282			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.100	U	GAM
Radium 226	13982-63-3	0.500	0.051	0.048	0.100		GAM
Radium 228	15262-20-1	0.834	0.12	0.106	0.200		GAM
Europium 152	14683-23-9	U		0.059	0.100	U	GAM
Europium 154	15585-10-1	U		0.091	0.100	U	GAM
Europium 155	14391-16-3	U		0.098	0.100	U	GAM
Thorium 228	14274-82-9	0.677	0.035	0.031			GAM
Thorium 232	TH-232	0.834	0.12	0.106			GAM
Uranium 235	15117-96-1	U		0.094		U	GAM
Uranium 238	U-238	U		3.48		U	GAM
Americium 241	14596-10-2	U		0.039		U	GAM
Silver 108m	14391-65-2	U		0.018		U	GAM
Barium 133	13981-41-4	U		0.026		U	GAM

100H BurialGroundsRemainSites-SoilQT

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>10/14/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7710
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1364

RESULTS

LAB	RAW	SUF-		Plutonium	Plutonium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240

Preparation batch 6174-011

R810025-01	7710-001	J17JF9		U	U
R810025-02	7710-002	Lab Control Sample		ok	ok
R810025-03	7710-003	Method Blank		U	U
R810025-04	7710-004	Duplicate (R810025-01)		- U	- U

Nominal values and limits from method	RDLs (pCi/g)	1.00	1.00
100H BurialGroundsRemainSites-SoilQT			

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX 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

Preparation batch 6174-011 2σ prep error 8.0 % Reference Lab Notebook #6174, pg. 11

R810025-01	J17JF9		0.322	0.500			63	103				16	10/09/08	10/10	SS-027
R810025-02	Lab Control Sample		0.319	0.500			86	103					10/09/08	10/10	SS-028
R810025-03	Method Blank		0.153	0.500			74	232					10/09/08	10/10	SS-031
R810025-04	Duplicate (R810025-01)		0.189	0.500			67	233				16	10/09/08	10/10	SS-032

Nominal values and limits from method	1.00	0.500	20-105	100	100	180
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PROCEDURES	REFERENCE	PUISO_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	<u>0.246</u> ± <u>0.175</u>
FOR 4 SAMPLES	YIELD	<u>72</u> ± <u>20</u>

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>10/14/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1364

Test U Matrix SOLID
 SDG 7710
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1364

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

LAB	RAW	SUF-	PLANCHET	CLIENT SAMPLE ID	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)						
					233/234	235	238	1+3	2σ	2+3	2σ			
Preparation batch 6174-011														
R810025-01			7710-001	J17JF9	0.530	U	0.307	173	121	0	22			
R810025-02			7710-002	Lab Control Sample	ok	ok	ok							
R810025-03			7710-003	Method Blank	U	U	U							
R810025-04			7710-004	Duplicate (R810025-01)	ok	- U	ok	192	142	0	19			
Nominal values and limits from method					RDLs (pCi/g)	1.00	1.00	1.00	100		4			
100H BurialGroundsRemainSites-SoilQT								Averages 183			0			

METHOD PERFORMANCE

LAB	RAW	SUF-	CLIENT SAMPLE ID	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
														YZED	DETECTOR	
Preparation batch 6174-011											2σ prep error 8.0 %	Reference Lab Notebook #6174, pg. 11				
R810025-01			J17JF9	0.258	0.500			79		102			16	10/09/08	10/10	SS-035
R810025-02			Lab Control Sample	0.509	0.500			86		102			10/09/08	10/10	SS-036	
R810025-03			Method Blank	0.278	0.500			72		103			10/09/08	10/10	SS-037	
R810025-04			Duplicate (R810025-01)	0.243	0.500			80		103			16	10/09/08	10/10	SS-038
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>0.322 ± 0.251</u>
FOR 4 SAMPLES	YIELD	<u>79 ± 11</u>

METHOD SUMMARIES

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LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID

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RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 6174-011

R810025-01	7710-001	J17JF9	U	U
R810025-02	7710-002	Lab Control Sample	ok	ok
R810025-03	7710-003	Method Blank	U	U
R810025-04	7710-004	Duplicate (R810025-01)	- U	- U

Nominal values and limits from method RDLs (pCi/g) 0.050 0.100
100H BurialGroundsRemainSites-SoilQT

METHOD PERFORMANCE

LAB 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

Preparation batch 6174-011 2σ prep error 7.0 % Reference Lab Notebook #6174, pg. 11

R810025-01	J17JF9	5.28	614	122	15	10/04/08	10/09	02,01,00
R810025-02	Lab Control Sample	0.028	600	141		10/04/08	10/11	MB,05,00
R810025-03	Method Blank	2.74	600	104		10/04/08	10/08	01,02,00
R810025-04	Duplicate (R810025-01)	11.2	618	104	14	10/04/08	10/08	MB,05,00

Nominal values and limits from method 0.050 600 100 180

PROCEDURES REFERENCE GAMMA_GS
SPP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 4.81 ± 9.54
FOR 4 SAMPLES YIELD _____ ± _____

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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.

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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.

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WORK SUMMARY

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

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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R E P O R T G U I D E

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D A T A S H E E T

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

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

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

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

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

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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.

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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.

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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.

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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.

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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

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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.

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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'

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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.

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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

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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.

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Collector Tony Welch-Koelling	Company Contact Doug Bowers	Telephone No. 509 531-0701	Project Coordinator KESSNER, JH	Price Code 2E	Data Turnaround 17 days
Project Designation 100-H Burial Grounds Remaining Sites - Soil Quick Turn	Sampling Location 118-H-5	K1364 (7710)	SAF No. RC-110		
Ice Chest No. AFS-04-122	Field Logbook No. EL 1627	COA R118H52600	Method of Shipment FED EX		
Shipped To Eberline Services / Lionville	Offsite Property No. A080367		Bill of Lading/Air Bill No. SEE CSPC		

Special Handling and/or Storage	Preservation	None	None	None	None													
	Type of Container	aG	P	aG	P													
	No. of Container(s)	1	1	1	1													
	Volume	120mL	1000mL	120mL	60mL													
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions	Isotopic Plutonium, Isotopic Uranium	Gross Alpha, Gross Beta											
Sample No	Matrix *	Sample Date	Sample Time															
J17JF9	SOIL	9-24-08	1225	X	X	X												

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>T Welch-Koelling</i>	Date/Time 9/24/08 1235	Received By/Stored In <i>Doug Bowers</i>	Date/Time 9-24-08/1235	(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=Soilment 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
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time 9-24-08/1710	Received By/Stored In <i>Ref 1A 1060</i>	Date/Time 9-24-08/1710			
Relinquished By/Removed From <i>Ref. 1A J.E. Bernhard</i>	Date/Time 9-30-08	Received By/Stored In <i>J.E. Bernhard</i>	Date/Time 9-30-08			
Relinquished By/Removed From <i>J.E. Bernhard</i>	Date/Time 9-30-08	Received By/Stored In <i>FED EX</i>	Date/Time			
Relinquished By/Removed From <i>FED EX</i>	Date/Time	Received By/Stored In <i>Fuy</i>	Date/Time 10/2/08 10:50			
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

PEB



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

AK 10/21/08

Client: W.C. HANFORD City RICHLAND State WA

Date/Time received 10/2/08 10⁰⁰ CoC No. RC-110-004

Container I.D. No. AFS-04-122 Requested TAT (Days) 15 P.O. Received Yes [] No []

INSPECTION

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

14. Was P.M. notified of any anomalies? Yes [] No [] Date _____

15. Inspected by MFY Date 10/02/08 Time: 10:30

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wide	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wide
J17JF9	260						

Ion Chamber Ser. No. _____

Calibration date _____

Alpha Meter Ser. No. _____

Calibration date _____

Beta/Gamma Meter Ser. No. 106482

Calibration date 10 JUL 08



RECEIVED
NOV 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 #	0810L007
SDG #	K1364
SAF #	RC-110
Date Received	10/1/08
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
PAH	
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-110 K1364

RECEIVED
 NOV 2008

DATE RECEIVED: 10/01/08

LVL LOT # :0810L007

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17JF9						
SILVER, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
SILVER, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
SILVER, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08
ARSENIC, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
ARSENIC, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
ARSENIC, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08
BARIUM, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
BARIUM, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
BARIUM, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08
CADMIUM, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
CADMIUM, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
CADMIUM, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08
CHROMIUM, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
CHROMIUM, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
CHROMIUM, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08
MERCURY, TOTAL	001	S	08C0176	09/24/08	10/03/08	10/06/08
MERCURY, TOTAL	001 REP	S	08C0176	09/24/08	10/03/08	10/06/08
MERCURY, TOTAL	001 MS	S	08C0176	09/24/08	10/03/08	10/06/08
LEAD, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
LEAD, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
LEAD, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08
SELENIUM, TOTAL	001	S	08L0375	09/24/08	10/14/08	10/16/08
SELENIUM, TOTAL	001 REP	S	08L0375	09/24/08	10/14/08	10/16/08
SELENIUM, TOTAL	001 MS	S	08L0375	09/24/08	10/14/08	10/16/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
SILVER, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08
ARSENIC LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
ARSENIC, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08
BARIUM LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
BARIUM, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08
CADMIUM LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
CADMIUM, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-110 K1364

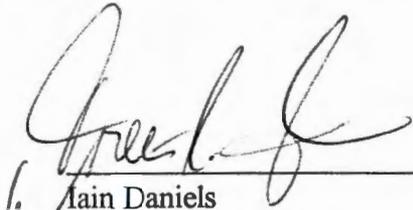
DATE RECEIVED: 10/01/08

LVL LOT # :0810L007

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
CHROMIUM, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08
MERCURY LABORATORY	LC1 BS	S	08C0176	N/A	10/03/08	10/06/08
MERCURY, TOTAL	MB1	S	08C0176	N/A	10/03/08	10/06/08
LEAD LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
LEAD, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08
SELENIUM LABORATORY	LC1 BS	S	08L0375	N/A	10/14/08	10/16/08
SELENIUM, TOTAL	MB1	S	08L0375	N/A	10/14/08	10/16/08

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. 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.
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

jjw/m10-007

10/28/08
Date



METALS METHOD GLOSSARY

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

Lot#: 081DL007

Leaching Procedure: 1310 1311 1312 Other:

CLP 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> 99 </u>
Bismuth	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<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> 99 </u>
Chromium	<input checked="" type="checkbox"/> <u> 6010B </u> <u> 7191^s </u>	<u> 200.7 </u> <u> 218.2 </u>			<u> SS17 </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> 7470A³ </u> <input checked="" type="checkbox"/> <u> 7471A³ </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> 99 </u>
Rare Earths	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<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> 6010B¹ </u>	<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> 6010B¹ </u>	<u> 200.7¹ </u>		<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> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>

Other: _____

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

INORGANICS DATA SUMMARY REPORT 10/20/08

CLIENT: WC-HANFORD RC-110 K1364
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0810L007

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J17JF9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.6	MG/KG	0.33	1.0
		Barium, Total	61.9	MG/KG	0.07	1.0
		Cadmium, Total	0.16	MG/KG	0.03	1.0
		Chromium, Total	12.9	MG/KG	0.13	1.0
		Mercury, Total	0.01	MG/KG	0.009	1.0
		Lead, Total	8.7	MG/KG	0.20	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/20/08

CLIENT: WC-HANFORD RC-110 K1364

LVL LOT #: 0810L007

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	08L0375-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	0.19	MG/KG	0.10	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Chromium, Total	0.20	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	08C0176-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/20/08

CLIENT: WC-HANFORD RC-110 K1364
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0810L007

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-001	J17JP9	Silver, Total	32.9	0.07u	36.0	91.4	1.0
		Arsenic, Total	120	3.6	131	88.5	1.0
		Barium, Total	183	61.9	131	92.7	1.0
		Cadmium, Total	3.0	0.16	3.3	86.2	1.0
		Chromium, Total	23.8	12.9	13.1	83.2	1.0
		Mercury, Total	0.18	0.01	0.15	115.0	1.0
		Lead, Total	37.8	8.7	32.8	88.7	1.0
		Selenium, Total	112	0.40u	131	85.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/20/08

CLIENT: WC-HANFORD RC-110 K1364
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0810L007

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	J17JF9	Silver, Total	0.07u	0.06u	NC	1.0
		Arsenic, Total	3.6	3.7	2.7	1.0
		Barium, Total	61.9	61.4	0.81	1.0
		Cadmium, Total	0.16	0.15	5.0	1.0
		Chromium, Total	12.9	12.8	0.78	1.0
		Mercury, Total	0.01	0.02	82.4	1.0
		Lead, Total	8.7	9.1	4.5	1.0
		Selenium, Total	0.40u	0.39u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/20/08

CLIENT: WC-HANFORD RC-110 K1364
 WORK ORDER: 60049-001-001-0001-00

LVL LOT #: 0810L007

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
=====	=====	=====	=====	=====	=====	=====
LCS1	08L0375-LC1	Silver, LCS	91.9	100	MG/KG	91.9
		Arsenic, LCS	896	1000	MG/KG	89.6
		Barium, LCS	462	500	MG/KG	92.4
		Cadmium, LCS	22.9	25.0	MG/KG	91.6
		Chromium, LCS	47.0	50.0	MG/KG	94.0
		Lead, LCS	231	250	MG/KG	92.4
		Selenium, LCS	874	1000	MG/KG	87.4
LCS1	08C0176-LC1	Mercury, LCS	4.6	4.7	MG/KG	98.7

MERCURY PREPARATION

Logbook # 498

Analyst: JIB
Date: 10/3/08
Start Time/Temp: 1540 / 92°
End Time/Temp: 1610 / 94°

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

Prep Batch: 08C0176
Worksheet: H6-100601
SOP No. ME-HgCVAA, Rev. 02

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.
Blank	SW			10mL	50mL	
0.2 µg/L	✓	0.100				
1.0	RU	0.500				
2.0	EMC	1.000				
5.0	NJ	2.500				
10.0	T	5.000				
1CV	884	0.165	2.5			
CCV	MHA	0.250	5.0			
1CB/1CB	95					90.50L
MBI	997			0.30		PBS176 100.00
TE 30 10 LC1	818	✗	✗	0.30		LCS176 L
08094007-001	975			0.33		99.83
001R	40			0.30		L
TE 145/10	W15	0.500	1.0	0.34		L
08094008-001	N4			0.33		99.40
001R	35			0.35		L
W15	NR	0.500	1.0	0.33		L
002	C8			0.34		99.41
003	K			0.35		99.18
08094150-002	1C			0.35		100.00
W2S	K9	0.050	10.0	0.35		
W2T	11A	0.050	10.0	0.34		
08094172-003	C			0.30		
W3S	6J	0.050	10.0	0.30		
W3T	5H	0.050	10.0	0.32		
08094198-001	TY			0.37		
001R	X5			0.34		

Standard:	ID	Prep Date/Time
ALMS	R16072-78-14B	10/3/08 1130
CVCCV/LCS	US 6072-78-15A	J

Reviewed By/Date: [Signature] 10/2/08
see book # 9368 for std traceability information

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 # 499

Analyst: UB
Date: 10/3/08
Start Time/Temp: _____
End Time/Temp: see page 499

Instrument ID: 1463.1
Balance #: 029 / NA
Pipette Calibration (Daily) Y

Prep Batch: 0800176
Worksheet: HL100601
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? Yes 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.
0809498-001S	X3	0.500	1.0	0.37	50 mL	R 100.0
002	401			0.32		
0810L002-001	Cid			0.33		
001R	UB			0.40		
001S	224	0.500	1.0	0.33		
002	Z			0.31		
0809499-001	X8			0.32		R 98.41
001R	K17			0.34		
001S	2I	0.500	1.0	0.32		
002				0.31		R 97.05

UB 10/3/08

Standard:	ID	Prep Date/Time
ALMS		
CVCCV/LCS	<i>see page 499</i>	

Reviewed By/Date: *[Signature]* 10/7

see book # 9368 for std traceability information

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

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0375
 Date/Time Initiated: 10/13/08 1400
 Date/Time Completed: 10/14/08 1730
 Analyst(s): mw
 Matrix: Soil Water Other: _____
 Instr. Type: AA ICP
 Parameters: See backlog

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)

Digested / Undigested (circle one)
 Balance #: B20
 Balance Cal Verif: NA
 Hot Plate Temp: 90°

3050B
 3051 SM 3030C (NC)
 CLP ILMO3.0
 ILMO4.0 Other _____

TW/BSC

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
0810L001-001		1.59g	100mL	12	TO	fine	brown soil	rocks	
001R		1.55g							
001S	1.0 mL	1.54g							
002		1.47g				coarse	straw sand	N/A	
003		1.51g				fine	brown soil	rocks	
004		1.55g							
005		1.57g							
0810L002-001		1.56g					wet, muddy solids	rocks/debris	
002		1.31g				coarse	dry brown soil	more debris	
002R		1.21g							
002S	1.0 mL	1.31g							
0810L007-001		1.57g				fine	light brown soil	rocks	
001R		1.55g							
001S	1.0 mL	1.53g					wet solids		
0810L008-001		1.52g				coarse	brown soil (dry)	rocks	
001R		1.45g							
001S	1.0 mL	1.54g							
002		1.54g							
003		1.52g							
0810L019-001		1.45g				coarse	brown-clay like	N/A	
001R		1.32g							
001S	1.0 mL	1.49g							
002		1.45g					reddish brown-clay like		
003		1.44g					brown-clay like		

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

Reagent IDs:
 HNO₃ G11022
 HCL G26054
 H₂O₂ G15A18
 1:1 HNO₃ 9789-086-06
 1:1 HCL _____

File ID#: IC037501
IC037502
 LIMS Transfer: Y N IC037503
 Data Review By/Date: mw 10/13/08

LCS may be double spiked with ICV-4 (Ag)
 MS's inadvertently spike with 1ml ICV-4
 in addition to MS's standards
 mw 10/13/08

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			RC-110-004	Page 1 of 1
Collector Tony Welch-Koelling	Company Contact Doug Bowers	Telephone No. 509 531-0701	Project Coordinator KESSNER, JH		Price Code 2E	Data Turnaround 15 days
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			
Chest No. JEB 9-30-08 AFS-ERC-02-407	Field Logbook No. EL 1627	COA R118H52600	Offsite Property No. ADBO 358		Bill of Lading/Air Bill No. SEE OSAC	
Shipped To EBERLINE SERVICES / LIONVILLE						

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None
	Type of Container	aG	P	aG	P
	No. of Container(s)	1	1	1	1
	Volume	120mL	1000mL	70mL	60mL

Special Handling and/or Storage	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Isotopic Plutonium, Isotopic Uranium	Gross Alpha, Gross Beta					
	SAMPLE ANALYSIS								
Sample No.	Matrix *	Sample Date	Sample Time						
17JF9	SOIL	9-24-08	1225	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>W. Koelling</i>	Date/Time 9/24/08 1235	Received By/Stored In <i>Doug Bowers</i>	Date/Time 9-24-08/1235	(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=Soilment SL=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Timber WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time 9-24-08/1710	Received By/Stored In <i>Ref 1A 1060 1149</i>	Date/Time 9-24-08/1710			
Relinquished By/Removed From <i>J.E. Bernhard</i>	Date/Time 9-30-08 0830	Received By/Stored In <i>J.E. Bernhard</i>	Date/Time 9-30-08 0830			
Relinquished By/Removed From <i>J.E. Bernhard</i>	Date/Time 9-30-08 0830	Received By/Stored In <i>FED EX</i>	Date/Time			
Relinquished By/Removed From <i>FED EX</i>	Date/Time 10-1-08 0930	Received By/Stored In <i>[Signature]</i>	Date/Time 10-1-08 0930			

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

000000016

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hartford
 Project/SAR/SOW/Release #: RC-110

Date: 10-1-88

LvLI Batch #: 08106210

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered or Shipped? | Carrier <u>FQ Ep</u> | Airbill # <u>792116307820</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 cooled or ambient? | Temp <u>2-2°</u> °C | Cooler # <u>ERC-02-407</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 | |
| Short holds taken to wet lab? | <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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input 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 _____ | |

