0079248

SAF-RC-113
618-7 Burial Ground
Verification Sampling
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow	L6-06	KW 10/31/08 Initials/Date
Kathy Wendt	H4-21	KW 10/31/08 Initials/Date

COMMENTS:

SDG K1394 **SAF-RC-113**

Rad only Chem only X Rad & Chem

X Complete Partial

WASTE SITE: 618-7 Burial Ground – Verif. Sampling

RECEIVED
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EDMC

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATIO
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Richmond, California 94804-384
Phone (510) 235-2633 Fax (51 0) 235-043
Toll Free (80 0) 841-548
www.eberlineservices.co

October 23, 2008

RECEIVED
OCT 2008

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

Reference: **P.O. #S00W235A00**
Eberline Services R8-10-125-7726, SDG K1394

Dear Ms. Kessner:

Enclosed is the data report for four solid (soil) samples designated under SAF No.RC-113 received at Eberline Services on October 17, 2008. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1394 was composed of four solid (soil) samples designated under SAF No. RC-113 with a Project Designation of: 618-7 Burial Grounds Verification Sampling.

The samples were 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 23, 2008.

2.0 ANALYSIS NOTES

2.1 Isotopic Thorium Analysis

The Th-22 tracer yield for the QC LCS was 108%, greater than the upper control limit of 105%. No problems were encountered during the course of the reanalyses.

2.2 Isotopic Uranium 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 Mannion

Melissa C. Mannion
Senior Program Manager

10/23/08

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP K1394

SDG	7726
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. S00W235A00
Case no	SDG K1394

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

T A B L E O F C O N T E N T S

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Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	10/23/08

SDG 7726
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/23/08

SDG 7726
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1394

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

SDG 7726
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R810125-01	J17J23	618-7 BurialGrnd V.sampl	SOLID		RC-113	RC-113-008	10/13/08 12:40
R810125-02	J17J24	618-7 BurialGrnd V.sampl	SOLID		RC-113	RC-113-008	10/13/08 12:50
R810125-03	J17J25	618-7 BurialGrnd V.sampl	SOLID		RC-113	RC-113-008	10/13/08 13:00
R810125-04	J17J26	618-7 BurialGrnd V.sampl	SOLID		RC-113	RC-113-008	10/13/08 13:15
R810125-05	Lab Control Sample		SOLID		RC-113		
R810125-06	Method Blank		SOLID		RC-113		
R810125-07	Duplicate (R810125-03)	618-7 BurialGrnd V.sampl	SOLID		RC-113		10/13/08 13:00

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

SDG 7726
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7726	RC-113-008	J17J23	SOLID	98.4	1417 g		10/16/08	3	R810125-01	7726-001
		J17J24	SOLID	97.9	1462 g		10/16/08	3	R810125-02	7726-002
		J17J25	SOLID	97.8	1483 g		10/16/08	3	R810125-03	7726-003
		J17J26	SOLID	98.7	1604 g		10/16/08	3	R810125-04	7726-004
		Method Blank	SOLID						R810125-06	7726-006
		Lab Control Sample	SOLID						R810125-05	7726-005
		Duplicate (R810125-03)	SOLID	97.8	1483 g		10/16/08	3	R810125-07	7726-007

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

SDG 7726
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
TH	SOLID	Thorium, Isotopic in Solids	6174-047	8.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	6174-047	8.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6174-047	7.0	4			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

SDG 7726
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R810125-01	J17J23			7726-001	GAM		10/18/08	10/21/08	BW	Gamma Scan
10/13/08	618-7 BurialGrnd V.sampl		SOLID	7726-001	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
10/16/08	RC-113-008	RC-113		7726-001	U		10/21/08	10/21/08	BW	Uranium, Isotopic in Solids
R810125-02	J17J24			7726-002	GAM		10/18/08	10/21/08	BW	Gamma Scan
10/13/08	618-7 BurialGrnd V.sampl		SOLID	7726-002	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
10/16/08	RC-113-008	RC-113		7726-002	U		10/21/08	10/21/08	BW	Uranium, Isotopic in Solids
R810125-03	J17J25			7726-003	GAM		10/18/08	10/21/08	BW	Gamma Scan
10/13/08	618-7 BurialGrnd V.sampl		SOLID	7726-003	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
10/16/08	RC-113-008	RC-113		7726-003	U		10/21/08	10/21/08	BW	Uranium, Isotopic in Solids
R810125-04	J17J26			7726-004	GAM		10/18/08	10/21/08	BW	Gamma Scan
10/13/08	618-7 BurialGrnd V.sampl		SOLID	7726-004	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
10/16/08	RC-113-008	RC-113		7726-004	U		10/21/08	10/21/08	BW	Uranium, Isotopic in Solids
R810125-05	Lab Control Sample			7726-005	GAM		10/18/08	10/21/08	BW	Gamma Scan
			SOLID	7726-005	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
		RC-113		7726-005	U		10/21/08	10/21/08	BW	Uranium, Isotopic in Solids
R810125-06	Method Blank			7726-006	GAM		10/18/08	10/21/08	BW	Gamma Scan
			SOLID	7726-006	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
		RC-113		7726-006	U		10/21/08	10/21/08	BW	Uranium, Isotopic in Solids
R810125-07	Duplicate (R810125-03)			7726-007	GAM		10/18/08	10/21/08	BW	Gamma Scan
10/13/08	618-7 BurialGrnd V.sampl		SOLID	7726-007	TH		10/22/08	10/22/08	BW	Thorium, Isotopic in Solids
10/16/08		RC-113		7726-007	U		10/21/08	10/21/08	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-113	Gamma Scan	GAMMA_GS	4			1	1	1	7
TH	RC-113	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	4			1	1	1	7
U	RC-113	Uranium, Isotopic in Solids	UISO_PLATE_AEA	4			1	1	1	7
TOTALS				12			3	3	3	21

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-006 Method Blank

METHOD BLANK

SDG	7726	Client/Case no	Hanford	SDG K1394	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R810125-06	Client sample id	Method Blank		
Dept sample id	7726-006	Material/Matrix		SOLID	
		SAF No	RC-113		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	-0.072	0.14	0.321	1.00	U	TH
Thorium 230	14269-63-7	0.216	0.19	0.183	1.00		TH
Thorium 232	TH-232	0.048	0.048	0.183	1.00	U	TH
Uranium 233/234	U-233/234	0	0.072	0.276	1.00	U	U
Uranium 235	15117-96-1	0.044	0.088	0.334	1.00	U	U
Uranium 238	U-238	0.072	0.073	0.276	1.00	U	U
Potassium 40	13966-00-2	U		0.359		U	GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.100	U	GAM
Radium 226	13982-63-3	U		0.030	0.100	U	GAM
Radium 228	15262-20-1	U		0.064	0.200	U	GAM
Europium 152	14683-23-9	U		0.038	0.100	U	GAM
Europium 154	15585-10-1	U		0.037	0.100	U	GAM
Europium 155	14391-16-3	U		0.039	0.100	U	GAM
Thorium 228	14274-82-9	U		0.022		U	GAM
Thorium 232	TH-232	U		0.064		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM
Uranium 238	U-238	U		1.56		U	GAM
Americium 241	14596-10-2	U		0.083		U	GAM

618-7 Burial Ground Verif.Sampling

QC-BLANK #67703

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7726
Contact Melissa C. Mannion

Client/Case no Hanford SDG K1394
Contract No. S00W235A00

Lab sample id R810125-05
Dept sample id 7726-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No RC-113

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
Thorium 230	35.1	2.8	0.204	1.00	B	TH	41.6	1.7	84	84-116	80-120
Uranium 233/234	18.5	1.7	0.815	1.00		U	19.3	0.77	96	81-119	80-120
Uranium 235	17.0	1.6	0.159	1.00		U	15.7	0.63	108	79-121	80-120
Uranium 238	19.5	1.8	0.772	1.00		U	21.0	0.84	93	82-118	80-120
Cobalt 60	0.601	0.033	0.014	0.050		GAM	0.608	0.024	99	86-114	80-120
Cesium 137	0.772	0.032	0.016	0.100		GAM	0.705	0.028	110	85-115	80-120

618-7 Burial Ground Verif.Sampling

QC-LCS #67702

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-007 J17J25

DUPLICATE

SDG	7726			Client/Case no	Hanford SDG K1394
Contact	Melissa C. Mannion			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	R810125-07	Lab sample id	R810125-03	Client sample id	J17J25
Dept sample id	7726-007	Dept sample id	7726-003	Location/Matrix	618-7 BurialGrnd V.sampl SOLID
		Received	10/16/08	Collected/Weight	10/13/08 13:00 1483 g
% solids	97.8	% solids	97.8	Custody/SAF No	RC-113-008 RC-113

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Thorium 228	0.620	0.30	0.378	1.00		TH	0.675	0.28	0.335		8	97	0.3
Thorium 230	0.555	0.26	0.163	1.00	B	TH	0.721	0.28	0.223		26	91	0.9
Thorium 232	0.384	0.17	0.163	1.00		TH	0.395	0.19	0.178		3	100	0.1
Uranium 233/234	0.993	0.30	0.162	1.00		U	1.09	0.32	0.171		9	65	0.4
Uranium 235	0.051	0.051	0.196	1.00	U	U	0.081	0.11	0.207	U	-		0.5
Uranium 238	1.08	0.31	0.162	1.00		U	1.23	0.33	0.171		13	61	0.6
Potassium 40	9.47	0.71	0.386			GAM	10.0	0.72	0.218		5	22	0.8
Cobalt 60	U		0.036	0.050	U	GAM	U		0.035	U	-		0
Cesium 137	U		0.030	0.100	U	GAM	U		0.034	U	-		0.2
Radium 226	0.373	0.067	0.062	0.100		GAM	0.395	0.061	0.053		6	38	0.4
Radium 228	0.501	0.13	0.133	0.200		GAM	0.454	0.14	0.140		10	62	0.5
Europium 152	U		0.074	0.100	U	GAM	U		0.081	U	-		0.1
Europium 154	U		0.111	0.100	U	GAM	U		0.114	U	-		0
Europium 155	U		0.094	0.100	U	GAM	U		0.102	U	-		0.1
Thorium 228	0.458	0.041	0.041			GAM	0.443	0.044	0.047		3	25	0.4
Thorium 232	0.501	0.13	0.133			GAM	0.454	0.14	0.140		10	62	0.5
Uranium 235	U		0.130		U	GAM	U		0.243	U	-		0.8
Uranium 238	U		4.18		U	GAM	U		4.43	U	-		0.1
Americium 241	U		0.255		U	GAM	U		0.266	U	-		0.1

618-7 Burial Ground Verif.Sampling

QC-DUP#3 67704

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-001 J17J23

DATA SHEET

SDG	7726	Client/Case no	Hanford	SDG K1394	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R810125-01	Client sample id	J17J23		
Dept sample id	7726-001	Location/Matrix	618-7 BurialGrnd V.sampl	SOLID	
Received	10/16/08	Collected/Weight	10/13/08 12:40	1417 g	
% solids	98.4	Custody/SAF No	RC-113-008	RC-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.197	0.23	0.311	1.00	U	TH
Thorium 230	14269-63-7	0.112	0.17	0.215	1.00	U	TH
Thorium 232	TH-232	0.450	0.23	0.215	1.00		TH
Uranium 233/234	U-233/234	5.13	0.74	0.145	1.00		U
Uranium 235	15117-96-1	0.138	0.092	0.175	1.00	U	U
Uranium 238	U-238	4.26	0.64	0.145	1.00		U
Potassium 40	13966-00-2	8.95	0.48	0.174			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.100	U	GAM
Radium 226	13982-63-3	0.289	0.039	0.036	0.100		GAM
Radium 228	15262-20-1	0.409	0.082	0.082	0.200		GAM
Europium 152	14683-23-9	U		0.049	0.100	U	GAM
Europium 154	15585-10-1	U		0.055	0.100	U	GAM
Europium 155	14391-16-3	U		0.064	0.100	U	GAM
Thorium 228	14274-82-9	0.361	0.026	0.025			GAM
Thorium 232	TH-232	0.409	0.082	0.082			GAM
Uranium 235	15117-96-1	0.242	0.094	0.117			GAM
Uranium 238	U-238	6.30	1.9	2.16			GAM
Americium 241	14596-10-2	U		0.138		U	GAM

618-7 Burial Ground Verif.Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-002 J17J24

DATA SHEET

SDG	7726	Client/Case no	Hanford SDG K1394
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R810125-02	Client sample id	J17J24
Dept sample id	7726-002	Location/Matrix	618-7 BurialGrnd V.sampl SOLID
Received	10/16/08	Collected/Weight	10/13/08 12:50 1462 g
% solids	97.9	Custody/SAF No	RC-113-008 RC-113

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.602	0.29	0.317	1.00		TH
Thorium 230	14269-63-7	0.200	0.23	0.317	1.00	U	TH
Thorium 232	TH-232	0.602	0.29	0.219	1.00		TH
Uranium 233/234	U-233/234	5.24	0.80	0.255	1.00		U
Uranium 235	15117-96-1	0.614	0.28	0.214	1.00		U
Uranium 238	U-238	5.05	0.79	0.221	1.00		U
Potassium 40	13966-00-2	9.77	0.42	0.210			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.100	U	GAM
Radium 226	13982-63-3	0.296	0.033	0.030	0.100		GAM
Radium 228	15262-20-1	0.517	0.084	0.081	0.200		GAM
Europium 152	14683-23-9	U		0.036	0.100	U	GAM
Europium 154	15585-10-1	U		0.060	0.100	U	GAM
Europium 155	14391-16-3	U		0.051	0.100	U	GAM
Thorium 228	14274-82-9	0.394	0.023	0.020			GAM
Thorium 232	TH-232	0.517	0.084	0.081			GAM
Uranium 235	15117-96-1	0.137	0.062	0.084			GAM
Uranium 238	U-238	2.81	2.2	2.56			GAM

618-7 Burial Ground Verif.Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-003 J17J25

DATA SHEET

SDG	7726	Client/Case no	Hanford SDG K1394
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R810125-03	Client sample id	J17J25
Dept sample id	7726-003	Location/Matrix	618-7 BurialGrnd V.sampl SOLID
Received	10/16/08	Collected/Weight	10/13/08 13:00 1483 g
% solids	97.8	Custody/SAF No	RC-113-008 RC-113

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.675	0.28	0.335	1.00		TH
Thorium 230	14269-63-7	0.721	0.28	0.223	1.00		TH
Thorium 232	TH-232	0.395	0.19	0.178	1.00		TH
Uranium 233/234	U-233/234	1.09	0.32	0.171	1.00		U
Uranium 235	15117-96-1	0.081	0.11	0.207	1.00	U	U
Uranium 238	U-238	1.23	0.33	0.171	1.00		U
Potassium 40	13966-00-2	10.0	0.72	0.218			GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.034	0.100	U	GAM
Radium 226	13982-63-3	0.395	0.061	0.053	0.100		GAM
Radium 228	15262-20-1	0.454	0.14	0.140	0.200		GAM
Europium 152	14683-23-9	U		0.081	0.100	U	GAM
Europium 154	15585-10-1	U		0.114	0.100	U	GAM
Europium 155	14391-16-3	U		0.102	0.100	U	GAM
Thorium 228	14274-82-9	0.443	0.044	0.047			GAM
Thorium 232	TH-232	0.454	0.14	0.140			GAM
Uranium 235	15117-96-1	U		0.243		U	GAM
Uranium 238	U-238	U		4.43		U	GAM
Americium 241	14596-10-2	U		0.266		U	GAM

618-7 Burial Ground Verif.Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

7726-004 J17J26

DATA SHEET

SDG	7726	Client/Case no	Hanford	SDG K1394	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R810125-04	Client sample id	J17J26		
Dept sample id	7726-004	Location/Matrix	618-7 BurialGrnd V.sampl	SOLID	
Received	10/16/08	Collected/Weight	10/13/08 13:15	1604 g	
% solids	98.7	Custody/SAF No	RC-113-008	RC-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.528	0.31	0.343	1.00		TH
Thorium 230	14269-63-7	0.310	0.25	0.297	1.00		TH
Thorium 232	TH-232	0.341	0.19	0.237	1.00		TH
Uranium 233/234	U-233/234	2.58	0.54	0.221	1.00		U
Uranium 235	15117-96-1	0.167	0.11	0.213	1.00	U	U
Uranium 238	U-238	2.03	0.49	0.221	1.00		U
Potassium 40	13966-00-2	8.99	0.49	0.208			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.100	U	GAM
Radium 226	13982-63-3	0.307	0.042	0.039	0.100		GAM
Radium 228	15262-20-1	0.449	0.11	0.102	0.200		GAM
Europium 152	14683-23-9	U		0.054	0.100	U	GAM
Europium 154	15585-10-1	U		0.065	0.100	U	GAM
Europium 155	14391-16-3	U		0.049	0.100	U	GAM
Thorium 228	14274-82-9	0.453	0.028	0.025			GAM
Thorium 232	TH-232	0.449	0.11	0.102			GAM
Uranium 235	15117-96-1	U		0.132		U	GAM
Uranium 238	U-238	U		2.60		U	GAM
Americium 241	14596-10-2	U		0.035		U	GAM

618-7 Burial Ground Verif.Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

Test	TH
Matrix	SOLID
SDG	7726
Contact	Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. S00W235A00
Contract	SDG K1394

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 6174-047					
R810125-01			7726-001	J17J23	U
R810125-02			7726-002	J17J24	U
R810125-03			7726-003	J17J25	0.721
R810125-04			7726-004	J17J26	0.310
R810125-05			7726-005	Lab Control Sample	ok
R810125-06			7726-006	Method Blank	0.216
R810125-07			7726-007	Duplicate (R810125-03)	ok
Nominal values and limits from method 618-7 Burial Ground Verif.Sampling				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6174-047			2σ prep error 8.0 %	Reference Lab Notebook #6174, pg. 38												
R810125-01			J17J23	0.311	0.250			103		202			9	10/22/08	10/22	SS-031
R810125-02			J17J24	0.317	0.250			98		202			9	10/22/08	10/22	SS-032
R810125-03			J17J25	0.335	0.250			102		203			9	10/22/08	10/22	SS-033
R810125-04			J17J26	0.343	0.250			94		203			9	10/22/08	10/22	SS-034
R810125-05			Lab Control Sample	0.204	0.250			108		201				10/22/08	10/22	SS-035
R810125-06			Method Blank	0.321	0.250			95		202				10/22/08	10/22	SS-037
R810125-07			Duplicate (R810125-03)	0.378	0.250			105		202			9	10/22/08	10/22	SS-038
Nominal values and limits from method				1.00	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD	MDA	0.316	± 0.108
FOR 7 SAMPLES	YIELD	101	± 10

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

Test U Matrix SOLID
SDG 7726
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1394

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6174-047											
R810125-01			7726-001	J17J23	5.13	U	4.26	120	25	3	2
R810125-02			7726-002	J17J24	5.24	0.614	5.05	104	23	12	6
R810125-03			7726-003	J17J25	1.09	U	1.23	89	35	7	9
R810125-04			7726-004	J17J26	2.58	U	2.03	127	41	8	6
R810125-05			7726-005	Lab Control Sample	ok	ok	ok				
R810125-06			7726-006	Method Blank	U	U	U				
R810125-07			7726-007	Duplicate (R810125-03)	ok	- U	ok	92	38	5	5
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
618-7 Burial Ground Verif.Sampling								Averages 106		7	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6174-047			2σ prep error 8.0 %	Reference Lab Notebook #6174, pg. 38												
R810125-01			J17J23	0.175	0.500			84		143			8	10/21/08	10/21	SS-027
R810125-02			J17J24	0.255	0.500			82		143			8	10/21/08	10/21	SS-028
R810125-03			J17J25	0.207	0.500			91		143			8	10/21/08	10/21	SS-031
R810125-04			J17J26	0.221	0.500			86		144			8	10/21/08	10/21	SS-032
R810125-05			Lab Control Sample	0.815	0.500			97		144				10/21/08	10/21	SS-033
R810125-06			Method Blank	0.334	0.500			57		144				10/21/08	10/21	SS-034
R810125-07			Duplicate (R810125-03)	0.196	0.500			77		143			8	10/21/08	10/21	SS-035
Nominal values and limits from method				1.00	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.315 ± 0.453
YIELD 82 ± 26

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/23/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1394

Test GAM Matrix SOLID
SDG 7726
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1394

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
Preparation batch 6174-047								
R810125-01			7726-001	J17J23	U		U	
R810125-02			7726-002	J17J24	U		U	
R810125-03			7726-003	J17J25	U		U	
R810125-04			7726-004	J17J26	U		U	
R810125-05			7726-005	Lab Control Sample	ok		ok	
R810125-06			7726-006	Method Blank	U		U	
R810125-07			7726-007	Duplicate (R810125-03)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.100	
618-7 Burial Ground Verif.Sampling								

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6174-047			2σ prep error 7.0 %	Reference Lab Notebook #6174, pg. 38												
R810125-01			J17J23	4.03	953					121			5	10/17/08	10/18	MB,08,00
R810125-02			J17J24	3.39	852					131			5	10/17/08	10/18	02,01,00
R810125-03			J17J25	6.69	794					102			5	10/17/08	10/18	MB,05,00
R810125-04			J17J26	4.06	990					102			5	10/17/08	10/18	MB,07,00
R810125-05			Lab Control Sample	0.014	790					106				10/17/08	10/18	01,02,00
R810125-06			Method Blank	3.57	790					106				10/17/08	10/18	MB,08,00
R810125-07			Duplicate (R810125-03)	6.14	794					113			5	10/17/08	10/18	MB,05,00
Nominal values and limits from method				0.050	790					100			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 3.98 ± 4.34
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/23/08

SDG 7726
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

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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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
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Report date 10/23/08

SDG 7726
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

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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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
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SDG 7726
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1394

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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Protocol Hanford1
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SDG 7726
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

Client Hanford
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Case no SDG K1394

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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Protocol Hanford1
Version Ver 1.0
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SDG 7726
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1394

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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SDG 7726
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

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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SDG 7726
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1394

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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Protocol Hanford1
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SDG 7726
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1394

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/23/08

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.

SDG 7726
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1394

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
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Version 3.06
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METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

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

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.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-113-008	Page 1 of 1

Collector T. Stephens, P. Pearson	**Company Contact** Joan Kessner	**Telephone No.** 509-375-4655	**Project Coordinator** KESSNER, JH
Price Code 8C	**Data Turnaround** ~~15~~ 7 Days		
Project Designation 618-7 Burial Ground Verification Sampling	**Sampling Location** 618-7 Burial Ground - Verif. Sampling K1394 (7726)	**SAF No.** RC-113	
Ice Chest No. AFS-06-004	**Field Logbook No.** EL-1395-13	**COA** RG61872600	**Method of Shipment** FED EX RTC 10/13/08
Shipped To EBERLINE SERVICES / LIONVILLE	**Offsite Property No.** A090018		**Bill of Lading/Air Bill No.** SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radiological contamination.

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P	P									
No. of Container(s)	1	1									
Volume	250mL	1000mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions RTC 10/13/08	See item (2) in Special Instructions.									Sample Area
Sample No. / Matrix * / Sample Date / Sample Time											
J17J23 / SOIL / 10/13/08 / 1240		X									B7
J17J24 / SOIL / " / 1250		X									B6
J17J25 / SOIL / " / 1300		X									A2
J17J26 / SOIL / 10/13/08 / 1315		X									C1

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: T Stephens / T Stephens	Received By/Stored In: RT Coffman / RT Coffman	1430 10/13/08
Relinquished By/Removed From: RT Coffman / RT Coffman	Received By/Stored In: Refer #1B, 1060	1530 10/13/08
Relinquished By/Removed From: Refer 1B, 1060 / J. E. Bernhard	Received By/Stored In: J. E. Bernhard	1030 10-15-08
Relinquished By/Removed From: J. E. Bernhard	Received By/Stored In: FED EX	1100 10-15-08
Relinquished By/Removed From: FED EX	Received By/Stored In:	10/16/08 08:30
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Antimony, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium, Thallium, Tin, Zirconium}: Mercury - 7471 - (CV)

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Thorium; Isotopic Uranium

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

JPD

Matrix *

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

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

WCH-EE-011

EBERLINE

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City RICHLAND State WA 10/16/08

Date/Time received 10/16/08 08:30 CoC No. RC-113-008

Container I.D. No. AFS-06-004 Requested TAT (Days) 7 P.O. Received Yes [ ] No [ ]

INSPECTION

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

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date ____
15. Inspected by [signature] Date 10/16/08 Time 09:30

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe
All Samples	<60						

Ion Chamber Ser. No. ____ Calibration date ____

Alpha Meter Ser. No. ____ Calibration date ____

Beta/Gamma Meter Ser. No. 100482 Calibration date 10 Jul 08

RECEIVED
OCT 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1394

DATE RECEIVED: 10/16/08 LVL LOT # :0810L087

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17J23						
SILVER, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
SILVER, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
SILVER, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
ALUMINUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
ALUMINUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
ALUMINUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
ARSENIC, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
ARSENIC, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
ARSENIC, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
BARIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
BARIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
BARIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
BERYLLIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
BERYLLIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
BERYLLIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
CALCIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
CALCIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
CALCIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
CADMIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
CADMIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
CADMIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
COBALT, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
COBALT, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
COBALT, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
CHROMIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
CHROMIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
CHROMIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
COPPER, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
COPPER, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
COPPER, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
IRON, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
IRON, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
IRON, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
MERCURY, TOTAL	001	S	08C0185	10/13/08	10/17/08	10/20/08
MERCURY, TOTAL	001 REP	S	08C0185	10/13/08	10/17/08	10/20/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1394

DATE RECEIVED: 10/16/08 LVL LOT # :0810L087

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 MS	S	08C0185	10/13/08	10/17/08	10/20/08
POTASSIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
POTASSIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
POTASSIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
MAGNESIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
MAGNESIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
MAGNESIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
MANGANESE, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
MANGANESE, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
MANGANESE, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
SODIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
SODIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
SODIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
NICKEL, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
NICKEL, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
NICKEL, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
LEAD, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
LEAD, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
LEAD, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
ANTIMONY, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
ANTIMONY, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
ANTIMONY, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
SELENIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
SELENIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
SELENIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
TIN, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
TIN, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
TIN, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
THALLIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
THALLIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
THALLIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
VANADIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
VANADIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
VANADIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
ZINC, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08
ZINC, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
ZINC, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
ZIRCONIUM, TOTAL	001	S	08L0382	10/13/08	10/20/08	10/22/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1394

DATE RECEIVED: 10/16/08 LVL LOT # :0810L087

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZIRCONIUM, TOTAL	001 REP	S	08L0382	10/13/08	10/20/08	10/22/08
ZIRCONIUM, TOTAL	001 MS	S	08L0382	10/13/08	10/20/08	10/22/08
J17J24						
SILVER, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
ALUMINUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
ARSENIC, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
BARIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
BERYLLIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
CALCIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
CADMIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
COBALT, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
CHROMIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
COPPER, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
IRON, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
MERCURY, TOTAL	002	S	08C0185	10/13/08	10/17/08	10/20/08
POTASSIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
MAGNESIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
MANGANESE, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
SODIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
NICKEL, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
LEAD, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
ANTIMONY, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
SELENIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
TIN, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
THALLIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
VANADIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
ZINC, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
ZIRCONIUM, TOTAL	002	S	08L0382	10/13/08	10/20/08	10/22/08
J17J25						
SILVER, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
ALUMINUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
ARSENIC, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
BARIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
BERYLLIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1394

DATE RECEIVED: 10/16/08 LVL LOT # :0810L087

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CALCIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
CADMIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
COBALT, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
CHROMIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
COPPER, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
IRON, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
MERCURY, TOTAL	003	S	08C0185	10/13/08	10/17/08	10/20/08
POTASSIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
MAGNESIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
MANGANESE, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
SODIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
NICKEL, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
LEAD, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
ANTIMONY, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
SELENIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
TIN, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
THALLIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
VANADIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
ZINC, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
ZIRCONIUM, TOTAL	003	S	08L0382	10/13/08	10/20/08	10/22/08
J17J26						
SILVER, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
ALUMINUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
ARSENIC, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
BARIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
BERYLLIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
CALCIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
CADMIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
COBALT, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
CHROMIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
COPPER, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
IRON, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
MERCURY, TOTAL	004	S	08C0185	10/13/08	10/17/08	10/20/08
POTASSIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
MAGNESIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
MANGANESE, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1394

DATE RECEIVED: 10/16/08 LVL LOT # :0810L087

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
NICKEL, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
LEAD, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
ANTIMONY, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
SELENIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
TIN, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
THALLIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
VANADIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
ZINC, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08
ZIRCONIUM, TOTAL	004	S	08L0382	10/13/08	10/20/08	10/22/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
SILVER, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
ALUMINUM LABORTORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08
ALUMINUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
ARSENIC LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
ARSENIC, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
BARIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
BARIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08
BERYLLIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
CALCIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08
CALCIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
CADMIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
CADMIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
COBALT LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
COBALT, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
CHROMIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
CHROMIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
COPPER LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
COPPER, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
IRON LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08
IRON, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
MERCURY LABORATORY	LC1 BS	S	08C0185	N/A	10/17/08	10/20/08
MERCURY, TOTAL	MB1	S	08C0185	N/A	10/17/08	10/20/08
POTASSIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1394

DATE RECEIVED: 10/16/08 LVL LOT # :0810L087

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08
MAGNESIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
MANGANESE LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
MANGANESE, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
SODIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/22/08
SODIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/22/08
NICKEL LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
NICKEL, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
LEAD LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
LEAD, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
ANTIMONY LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
ANTIMONY, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
SELENIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
SELENIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
TIN LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
TIN, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
THALLIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
THALLIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
VANADIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
VANADIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
ZINC LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
ZINC, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08
ZIRCONIUM LABORATORY	LC1 BS	S	08L0382	N/A	10/20/08	10/21/08
ZIRCONIUM, TOTAL	MB1	S	08L0382	N/A	10/20/08	10/21/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-113
LVL#: 0810L087
SDG/SAF#: K1394/RC-113

W.O.#: 60049-001-001-0001-00
Date Received: 10-16-08

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 4 soil samples.

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

   The samples were initially run with a 2-fold dilution for ICP metals due to sample matrix.

   Sample J17J25 was rerun in file TA1022C due to insufficient volume in the sample cup.

   The samples were rerun on a different instrument with a 3-fold dilution for Aluminum, Beryllium, Calcium, Iron, Potassium, Magnesium, and Sodium 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 for various analytes in file TA1021A and Sodium in file TA1021B. The samples were rerun and reported from file PS1022A for Sodium along with Aluminum, Beryllium, Calcium, Iron, Potassium, and Magnesium.

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

6. The preparation/method blank for 1 analyte was outside method criteria. {less than the Limit of Quantitation (3-10X the LOD), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Sodium was greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and all samples read less than 20 times the MB concentration.

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 25 pages.

However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

7. All ICP Interference Check Standards were within control limits.

8. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

9. The matrix spike (MS) recoveries for 4 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
J17J23	Antimony	200	104.1
	Aluminum	66,000	98.7
	Iron	126,000	85.0
	Lead	200	104.6

11. The duplicate analyses for 4 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.

10/30/08

Date

Iain Daniels
Laboratory Manager
Lionville Laboratory

alm/m10-087

LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 08101087

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	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__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	✓6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	✓6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-03/01
000000009

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 10/27/08

CLIENT: WC-HANFORD RC-113 K1394

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

LVL LOT #: 0810L087

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17J23	Silver, Total	0.14 u	MG/KG	0.14	2.0
		Aluminum, Total	4560	MG/KG	8.5	3.0
		Arsenic, Total	1.5	MG/KG	0.71	2.0
		Barium, Total	65.5	MG/KG	0.14	2.0
		Beryllium, Total	0.21	MG/KG	0.11	3.0
		Calcium, Total	6090	MG/KG	8.5	3.0
		Cadmium, Total	0.10	MG/KG	0.07	2.0
		Cobalt, Total	9.2	MG/KG	0.28	2.0
		Chromium, Total	9.4	MG/KG	0.28	2.0
		Copper, Total	13.7	MG/KG	0.28	2.0
		Iron, Total	26200	MG/KG	9.6	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Potassium, Total	494	MG/KG	105	3.0
		Magnesium, Total	4540	MG/KG	7.9	3.0
		Manganese, Total	316	MG/KG	0.06	2.0
		Sodium, Total	342	MG/KG	4.3	3.0
		Nickel, Total	15.9	MG/KG	0.28	2.0
		Lead, Total	20.1	MG/KG	0.43	2.0
		Antimony, Total	0.43 u	MG/KG	0.43	2.0
		Selenium, Total	0.85 u	MG/KG	0.85	2.0
		Tin, Total	0.85 u	MG/KG	0.85	2.0
		Thallium, Total	0.85 u	MG/KG	0.85	2.0
		Vanadium, Total	77.0	MG/KG	0.20	2.0
		Zinc, Total	49.7	MG/KG	0.85	2.0
		Zirconium, Total	23.7	MG/KG	0.71	2.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17J24	Silver, Total	0.14 u	MG/KG	0.14	2.0
		Aluminum, Total	5640	MG/KG	8.3	3.0
		Arsenic, Total	1.8	MG/KG	0.69	2.0
		Barium, Total	75.1	MG/KG	0.14	2.0
		Beryllium, Total	0.45	MG/KG	0.10	3.0
		Calcium, Total	5910	MG/KG	8.3	3.0
		Cadmium, Total	0.08	MG/KG	0.07	2.0
		Cobalt, Total	9.4	MG/KG	0.28	2.0
		Chromium, Total	9.2	MG/KG	0.28	2.0
		Copper, Total	27.6	MG/KG	0.28	2.0
		Iron, Total	25700	MG/KG	9.3	3.0
		Mercury, Total	0.03	MG/KG	0.009	1.0
		Potassium, Total	662	MG/KG	102	3.0
		Magnesium, Total	4280	MG/KG	7.6	3.0
		Manganese, Total	338	MG/KG	0.06	2.0
		Sodium, Total	290	MG/KG	4.1	3.0
		Nickel, Total	11.3	MG/KG	0.28	2.0
		Lead, Total	14.1	MG/KG	0.41	2.0
		Antimony, Total	0.41 u	MG/KG	0.41	2.0
		Selenium, Total	0.83 u	MG/KG	0.83	2.0
		Tin, Total	1.9	MG/KG	0.83	2.0
		Thallium, Total	0.83 u	MG/KG	0.83	2.0
		Vanadium, Total	73.4	MG/KG	0.19	2.0
		Zinc, Total	56.2	MG/KG	0.83	2.0
		Zirconium, Total	31.0	MG/KG	0.69	2.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J17J25	Silver, Total	0.13 u	MG/KG	0.13	2.0
		Aluminum, Total	4400	MG/KG	8.0	3.0
		Arsenic, Total	1.0	MG/KG	0.67	2.0
		Barium, Total	66.8	MG/KG	0.13	2.0
		Beryllium, Total	0.38	MG/KG	0.1	3.0
		Calcium, Total	5860	MG/KG	8.0	3.0
		Cadmium, Total	0.07 u	MG/KG	0.07	2.0
		Cobalt, Total	10.2	MG/KG	0.27	2.0
		Chromium, Total	6.6	MG/KG	0.27	2.0
		Copper, Total	14.0	MG/KG	0.27	2.0
		Iron, Total	27600	MG/KG	9.0	3.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Potassium, Total	714	MG/KG	98.4	3.0
		Magnesium, Total	4440	MG/KG	7.4	3.0
		Manganese, Total	352	MG/KG	0.05	2.0
		Sodium, Total	365	MG/KG	4.0	3.0
		Nickel, Total	9.7	MG/KG	0.27	2.0
		Lead, Total	2.4	MG/KG	0.40	2.0
		Antimony, Total	0.51	MG/KG	0.40	2.0
		Selenium, Total	0.80 u	MG/KG	0.80	2.0
		Tin, Total	0.80 u	MG/KG	0.80	2.0
		Thallium, Total	0.80 u	MG/KG	0.80	2.0
		Vanadium, Total	77.7	MG/KG	0.19	2.0
		Zinc, Total	49.0	MG/KG	0.80	2.0
		Zirconium, Total	24.1	MG/KG	0.67	2.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J17J26	Silver, Total	0.14 u	MG/KG	0.14	2.0
		Aluminum, Total	3730	MG/KG	8.2	3.0
		Arsenic, Total	0.92	MG/KG	0.68	2.0
		Barium, Total	57.9	MG/KG	0.14	2.0
		Beryllium, Total	0.36	MG/KG	0.10	3.0
		Calcium, Total	6160	MG/KG	8.2	3.0
		Cadmium, Total	0.07 u	MG/KG	0.07	2.0
		Cobalt, Total	9.8	MG/KG	0.27	2.0
		Chromium, Total	5.7	MG/KG	0.27	2.0
		Copper, Total	12.7	MG/KG	0.27	2.0
		Iron, Total	26800	MG/KG	9.2	3.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Potassium, Total	451	MG/KG	100	3.0
		Magnesium, Total	4150	MG/KG	7.5	3.0
		Manganese, Total	330	MG/KG	0.05	2.0
		Sodium, Total	334	MG/KG	4.1	3.0
		Nickel, Total	10.0	MG/KG	0.27	2.0
		Lead, Total	2.0	MG/KG	0.41	2.0
		Antimony, Total	0.41 u	MG/KG	0.41	2.0
		Selenium, Total	0.82 u	MG/KG	0.82	2.0
		Tin, Total	0.82 u	MG/KG	0.82	2.0
		Thallium, Total	0.82 u	MG/KG	0.82	2.0
		Vanadium, Total	79.6	MG/KG	0.19	2.0
		Zinc, Total	49.4	MG/KG	0.82	2.0
		Zirconium, Total	25.1	MG/KG	0.68	2.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0382-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	12.0	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.20	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	25.7	MG/KG	4.0	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	0.20 u	MG/KG	0.20	1.0
		Iron, Total	10.6	MG/KG	4.5	1.0
		Potassium, Total	49.3 u	MG/KG	49.3	1.0
		Magnesium, Total	19.9	MG/KG	3.7	1.0
		Manganese, Total	0.11	MG/KG	0.04	1.0
		Sodium, Total	33.9	MG/KG	2.0	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
		Tin, Total	0.62	MG/KG	0.60	1.0
		Thallium, Total	0.60 u	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
		Zirconium, Total	0.50 u	MG/KG	0.50	1.0
BLANK1	08C0185-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17J23	Silver, Total	3.3	0.14u	3.5	94.3	2.0
		Aluminum, Total	4860	4560	138	216.7*	3.0
		Arsenic, Total	131	1.5	138	93.6	2.0
		Barium, Total	199	65.5	138	96.5	2.0
		Beryllium, Total	3.7	0.21	3.5	99.8	3.0
		Calcium, Total	8180	6090	1730	120.9	3.0
		Cadmium, Total	3.3	0.10	3.5	91.3	2.0
		Cobalt, Total	41.6	9.2	34.6	93.6	2.0
		Chromium, Total	24.9	9.4	13.8	112.3	2.0
		Copper, Total	29.8	13.7	17.3	93.1	2.0
		Iron, Total	26100	26200	69.1	-220. *	3.0
		Mercury, Total	0.14	0.00u	0.15	88.9	1.0
		Potassium, Total	2060	494	1730	90.5	3.0
		Magnesium, Total	5840	4540	1730	75.7	3.0
		Manganese, Total	353	316	34.6	107.2*	2.0
		Sodium, Total	2120	342	1730	102.8	3.0
		Nickel, Total	44.3	15.9	34.6	82.1	2.0
		Lead, Total	39.6	20.1	34.6	56.4	2.0
		Antimony, Total	21.5	0.43u	34.6	62.1	2.0
		Selenium, Total	125	0.85u	138	90.3	2.0
		Tin, Total	65.4	0.85u	69.1	94.6	2.0
		Thallium, Total	130	0.85u	138	94.4	2.0
		Vanadium, Total	110	77.0	34.6	95.1	2.0
		Zinc, Total	81.6	49.7	34.6	92.2	2.0
		Zirconium, Total	337	23.7	346	90.7	2.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17J23	Silver, Total	0.14u	0.14u	NC	2.0
		Aluminum, Total	4560	4300	6.0	3.0
		Arsenic, Total	1.5	1.3	14.3	2.0
		Barium, Total	65.5	64.4	1.7	2.0
		Beryllium, Total	0.21	0.29	31.3	3.0
		Calcium, Total	6090	6090	0.013	3.0
		Cadmium, Total	0.10	0.07	33.3	2.0
		Cobalt, Total	9.2	9.5	3.2	2.0
		Chromium, Total	9.4	8.8	6.6	2.0
		Copper, Total	13.7	14.5	5.7	2.0
		Iron, Total	26200	26200	0.083	3.0
		Mercury, Total	0.00u	0.01	~~NC~~ * 200	1.0
		Potassium, Total	494	419	16.6	3.0
		Magnesium, Total	4540	4400	3.1	3.0
		Manganese, Total	316	324	2.4	2.0
		Sodium, Total	342	352	2.9	3.0
		Nickel, Total	15.9	13.9	13.4	2.0
		Lead, Total	20.1	7.4	92.4	2.0
		Antimony, Total	0.43u	0.41u	NC	2.0
		Selenium, Total	0.85u	0.82u	NC	2.0
		Tin, Total	0.85u	0.82u	NC	2.0
		Thallium, Total	0.85u	0.82u	NC	2.0
		Vanadium, Total	77.0	79.8	3.6	2.0
		Zinc, Total	49.7	51.5	3.6	2.0
		Zirconium, Total	23.7	24.9	4.9	2.0

* Corrected RPD
Aem 10/29/08

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/27/08

CLIENT: WC-HANFORD RC-113 K1394 LVL LOT #: 0810L087

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0382-LC1	Silver, LCS	48.3	50.0	MG/KG	96.6
		Aluminum, LCS	504	500	MG/KG	100.8
		Arsenic, LCS	935	1000	MG/KG	93.5
		Barium, LCS	482	500	MG/KG	96.5
		Beryllium, LCS	23.4	25.0	MG/KG	93.6
		Calcium, LCS	2340	2500	MG/KG	93.4
		Cadmium, LCS	23.7	25.0	MG/KG	94.8
		Cobalt, LCS	238	250	MG/KG	95.3
		Chromium, LCS	49.1	50.0	MG/KG	98.2
		Copper, LCS	121	125	MG/KG	96.6
		Iron, LCS	505	500	MG/KG	100.9
		Potassium, LCS	2340	2500	MG/KG	93.6
		Magnesium, LCS	2360	2500	MG/KG	94.2
		Manganese, LCS	74.5	75.0	MG/KG	99.3
		Sodium, LCS	2410	2500	MG/KG	96.6
		Nickel, LCS	192	200	MG/KG	96.2
		Lead, LCS	240	250	MG/KG	96.0
		Antimony, LCS	286	300	MG/KG	95.3
		Selenium, LCS	927	1000	MG/KG	92.7
		Tin, LCS	471	500	MG/KG	94.1
		Thallium, LCS	953	1000	MG/KG	95.3
		Vanadium, LCS	241	250	MG/KG	96.4
		Zinc, LCS	97.4	100	MG/KG	97.4
		Zirconium, LCS	480	500	MG/KG	96.1
LCS1	08C0185-LC1	Mercury, LCS	4.9	4.7	MG/KG	104.1

Lionville Laboratory Incorporated Logbook #: 518

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0382
Date/Time Initiated: 10/20/08 1400
Date/Time Completed: 10/20/08 2100
Analyst(s): MW
Matrix: (Soil) Water Other:
Instr. Type: AA (CP)
Parameters: See packet

(Digested) Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 91°

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

TNW

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
0810L092-001		1.48 gr	100 ml	<2	TO	not fine	brown/tan soil	rocks	
001R		1.50 gr							
001S	1.0 ml *	1.52 gr							
002		1.50 gr				coarse	brown soil	rocks/veg.	
003		1.49 gr				not fine	brown/tan soil	rocks	RAD
004		1.54 gr				coarse	brown soil		
005		1.48 gr				not fine	brown/tan soil		
006		1.55 gr							RAD
007		1.53 gr							
008		1.77 gr				coarse	brown soil		
009		1.48 gr				not fine	black/tan soil		
010		1.55 gr							
011		1.51 gr							
0810L087-001		1.42 gr							RAD
001R		1.47 gr							
001S	1.0 ml *	1.46 gr							
002		1.49 gr							
003		1.53 gr							
004		1.48 gr							
0810L046-001		1.50 gr				fine	brown soil		
001R		1.54 gr							
001S	1.0 ml	1.54 gr							
0810L051-001		1.48 gr							
001R		1.46 gr							

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

Reagent IDs:
HNO_3 G17027
HCL G26054
H_2O_2 G15A18
1:1 HNO_3 9789-086-06
1:1 HCL

File ID#: IC038201 IC038202 IC038203
LIMS Transfer: (Y) N Updated
Data Review By/Date: PMP, 10/22/08

Lionville Laboratory Incorporated Logbook #: 518

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0382
Date/Time Initiated:
Date/Time Completed:
Analyst(s): see page 011
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, 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

TMW

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
08102051-001S		1.52gr	100ml	<2	TO	fine	brown red	ROCKS	
08L0382-MB1		1.0gr				coarse	bright clear		
LCS	1.0ml	1.0gr							

APM 10/20/08

Spiking IDs:
MS #: see page 011

LCS #:

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

see page 011

File ID#: IC038201, IC038202, IC038203

LIMS Transfer: (Y) N Updated

Data Review By/Date: PMP, 10/22/08

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: TLA
Date: 10/17/08
Start Time/Temp: 1440 / 95°
End Time/Temp: 1510 / 98°

Instrument ID: HG3.1
Balance #: B29 / NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0185
Worksheet: HG102001
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 Inital/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	M1			10mL	50mL	
0.2 µg/L	3J2	0.100				
1.0	2X	0.500				
2.0	3VG	1.000				
5.0	695	2.500				
10.0	569	5.000				
ICV	L16	0.125	2.5			
CCV	K	0.250	5.0			
ICB/CCB	483					98.52
MB1	2V			0.30		PBS185 100.00
LC1	P3	*	*	0.33		LCSS185 95.78
~~08C0185- MB1~~ TEA 10/17/08	191					TG 10/17/08
~~LC1~~	5H			TEA 10/17/08		
0810L080-001	C			0.31		95.78
001R	NJ			0.35		
001S	K9	0.500	1.0	0.31		
002	11A			0.34		94.62
0810L081-001	Q7			0.33		R 94.06
001R	NR			0.34		
001S	KC	0.500	1.0	0.33		
002	HR			0.32		90.36
003	58			0.34		92.06
004	224			0.33		91.51
005	Q2			0.31		91.91
0810L087-001	41			0.33		99.20 ~~89.96~~ TE 10/22/08
001R	6J			0.32		
001S	T4	0.500	1.0	0.33		

Standard:	ID	Prep Date/Time
ICAL/MS	R1 6072-78-14B	10/17/08 0910
ICV/CCV/LCS	US 6072-78-15A	↓

Reviewed By/Date: [signature] 10/22/08

see book # 9368 for std traceability information

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

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

ME-HgCVAA-Prep1007

Page #:

000000021

Conville Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: UD
Date: 10/17/08
Start Time/Temp:
End Time/Temp: see page 063

Instrument ID: HG3.1
Balance #: B29 / NA
Pipette Calibration (Daily) Y ___

Prep Batch: 08C0185
Worksheet: HG102001
SOP No. ME-HgCVAA, Rev. 02

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

NOTE: The Inital/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. TB 10/24/08
08I0L087-002	LV			0.36	50mL	97.2857
003	L5			0.36		98.25
004	C48			0.38		99.26
08I0L088-001	G12			0.30		94.38
001R	BB			0.32		⊥
001S	X3	0.500	1.0	0.30		⊥
08I0L082-001	925			0.37		99.96
002	X5			0.33		97.28
002R	AP			0.36		⊥
002S	886	0.500	1.0	0.33		⊥
003	35			0.35		95.65
004	A7			0.34		76.39
005	500			0.31		81.17

UD 10/17/08

Standard:	ID	Prep Date/Time
MS/MSD		
CCV/LCS	see page 063	

Reviewed By/Date: [signature] 10/22/08

see book # 9368 for std traceability information

LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg
Lot # E021

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

HgCVAA-Prep1007

Page #:

000000022

See SRC

Lionville Laboratory Use Only: 08101087

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000023

Client: WC HANFORD BC-113

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: 7 DAY

Date Rec'd: 10-16-08 Date Due: 10-23-08

Refrigerator #								A 3							
#/Type Container	Liquid							1C							
	Solid														
Volume								500							
Preservatives															
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: TAP Metal	CN						
Lionville Laboratory Use Only								Mat 0							

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Mat 0
001	J17J 23			Soil	10-13-08	1240	X
002	24					1250	X
003	25					1300	X
004	26					1315	X

Special Instructions: Run matrix QC

Mat 0 = HSL + Sn, Zr

Special Instructions:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time

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-113-008	Page 1 of 1

Collector T. Stephens, P. Pearson	Company Contact Joan Kessner	Telephone No. 509-375-4655	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround ~~15~~ 7 Days RTC 10/10/08		
Project Designation 618-7 Burial Ground Verification Sampling	Sampling Location 618-7 Burial Ground - Verif. Sampling		SAF No. RC-113
Ice Chest No. AFS-04-054	Field Logbook No. EL-1395-13	COA RG61872600	Method of Shipment FED EX
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A090034		Bill of Lading/Air Bill No. SEE OSR

000000024

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radiological contamination.

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P	P									
No. of Container(s)	1	1									
Volume	~~250mL~~ 500 RTC 10/13/08	1000mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions. RTC 10/13/08									Sample AREA
Sample No. / Matrix * / Sample Date / Sample Time											
J17J23 / SOIL / 10/13/08 / 1240	X										B7
J17J24 / SOIL / " / 1250	X										B6
J17J25 / SOIL / " / 1300	X										A2
J17J26 / SOIL / 10/13/08 / 1315	X										C1

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: T Stephens / T Stephens	Received By/Stored In: RT Coffman / RT Coffman	1430 10/13/08
Relinquished By/Removed From: R T Coffman / RT Coffman 10/13/08	Received By/Stored In: Refer #18, 1060, 10/13/08	1530
Relinquished By/Removed From: Refer 18 / J. E. Bernhard	Received By/Stored In: J. E. Bernhard	1030 10-15-08
Relinquished By/Removed From: J. E. Bernhard	Received By/Stored In: FED EX	1100 10-15-08
Relinquished By/Removed From: FED EX	Received By/Stored In: [illegible]	10-16-08 0940
Relinquished By/Removed From	Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Antimony, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium, Thallium, Tin, Zirconium}; Mercury - 7471 - (CV)

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Thorium; Isotopic Uranium

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

JCH

Matrix *

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

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

WCH-EE-011

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC HANFORD
Project/SAP/SOW/Release #: RC-074

Date: 10/16/08

LvLI Batch #: 0810L087

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7993 9456 8691
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 2.1°	°C	Cooler # AFS-04-054
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