0092411

SAF-RC-029
Remaining Sites Confirmation Sampling – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 12/7/10
INITIAL/DATE

COMMENTS:

SDG K2489 SAF RC-029

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

Waste Site: 100-K-78

RECEIVED
DEC 13 2010
EDMC

EBERLINE SERVICES

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December 2, 2010

RECEIVED DEC 2010

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

Reference: **P.O. #S00W235A00**
Eberline Analytical S0-11-055-7735, SDG K2489

Dear Ms. Kessner:

Enclosed is the data report for five solid (soil) samples designated under SAF No. RC-029 received at Eberline Analytical on November 10, 2010. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville
Client Services Manager

NJV/ljb

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K2489 was composed of five solid (soil) samples designated under SAF No. RC-029 with a Project Designation of: Remaining Sites Confirmation Sampling – Soil Full Protocol

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist. The results were transmitted to WCH via e-mail on December 2, 2010.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.7 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."

N. Joseph Verville
Client Services Manager

12/2/10
Date

E B E R L I N E A N A L Y T I C A L / R I C H M O N D
SAMPLE DELIVERY GROUP K2489

SDG	7735
Contact	N.Joseph Verville

Client	Hanford
Contract	No. S00W235A00
Case no	SDG K2489

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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VB

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG	7735
Contact	N.Joseph Verville

REPORT GUIDE

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K2489

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	12/02/10

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG 7735
Contact N.Joseph Verville

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
S011055-01	J1CDR4	100-K-78	SOLID		RC-029	RC-029-095	11/05/10 09:55
S011055-02	J1CDR5	100-K-78	SOLID		RC-029	RC-029-095	11/05/10 10:10
S011055-03	J1CDR6	100-K-78	SOLID		RC-029	RC-029-095	11/05/10 10:15
S011055-04	J1CN20	100-K-78	SOLID		RC-029	RC-029-097	11/05/10 09:15
S011055-05	J1CN21	100-K-78	SOLID		RC-029	RC-029-097	11/05/10 09:35
S011055-06	Lab Control Sample		SOLID		RC-029		
S011055-07	Method Blank		SOLID		RC-029		
S011055-08	Duplicate (S011055-01)	100-K-78	SOLID		RC-029		11/05/10 09:55

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG 7735
Contact N.Joseph Verville

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7735	RC-029-095	J1CDR4	SOLID	98.4	1452 g		11/10/10	5	S011055-01	7735-001
		J1CDR5	SOLID	98.0	1148 g		11/10/10	5	S011055-02	7735-002
		J1CDR6	SOLID	98.2	1158 g		11/10/10	5	S011055-03	7735-003
	RC-029-097	J1CN20	SOLID	97.1	1445 g		11/10/10	5	S011055-04	7735-004
		J1CN21	SOLID	98.4	1384 g		11/10/10	5	S011055-05	7735-005
		Method Blank	SOLID						S011055-07	7735-007
		Lab Control Sample	SOLID						S011055-06	7735-006
		Duplicate (S011055-01)	SOLID	98.4	1452 g		11/10/10	5	S011055-08	7735-008

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG 7735
Contact N.Joseph Verville

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
PU	SOLID	Plutonium, Isotopic in Solids	7276-165	8.0	5			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	7276-165	8.0	5			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7276-165	10.4	5			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7276-165	7.0	5			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Solids	7276-165	10.0	5			1	1	1/1		
H	SOLID	Tritium in Solids	7276-165	10.0	5			1	1	1/1		
NI_L	SOLID	Nickel 63 in Solids	7276-165	11.2	5			1	1	1/1		

Duplicates and Spikes are those with original sample in the QC Batch of some Client sample in this SDG.
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 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG 7735
Contact N.Joseph Verville

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S011055-01	J1CDR4			7735-001	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
11/05/10	100-K-78		SOLID	7735-001	GAM		11/17/10	11/23/10	MWT	Gamma Scan
11/10/10	RC-029-095	RC-029		7735-001	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-001	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-001	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-001	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-001	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids
S011055-02	J1CDR5			7735-002	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
11/05/10	100-K-78		SOLID	7735-002	GAM		11/17/10	11/23/10	MWT	Gamma Scan
11/10/10	RC-029-095	RC-029		7735-002	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-002	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-002	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-002	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-002	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids
S011055-03	J1CDR6			7735-003	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
11/05/10	100-K-78		SOLID	7735-003	GAM		11/17/10	11/23/10	MWT	Gamma Scan
11/10/10	RC-029-095	RC-029		7735-003	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-003	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-003	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-003	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-003	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids
S011055-04	J1CN20			7735-004	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
11/05/10	100-K-78		SOLID	7735-004	GAM		11/18/10	11/23/10	MWT	Gamma Scan
11/10/10	RC-029-097	RC-029		7735-004	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-004	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-004	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-004	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-004	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids
S011055-05	J1CN21			7735-005	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
11/05/10	100-K-78		SOLID	7735-005	GAM		11/18/10	11/23/10	MWT	Gamma Scan
11/10/10	RC-029-097	RC-029		7735-005	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-005	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-005	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-005	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-005	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG 7735
Contact N.Joseph Verville

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S011055-06	Lab Control Sample			7735-006	C		11/17/10	11/23/10	BW	Carbon 14 in Solids
			SOLID	7735-006	GAM		11/18/10	11/23/10	MWT	Gamma Scan
		RC-029		7735-006	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-006	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-006	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-006	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-006	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids
S011055-07	Method Blank			7735-007	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
			SOLID	7735-007	GAM		11/18/10	11/23/10	MWT	Gamma Scan
		RC-029		7735-007	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-007	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-007	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-007	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-007	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids
S011055-08	Duplicate (S011055-01)			7735-008	C		11/15/10	11/23/10	BW	Carbon 14 in Solids
11/05/10	100-K-78		SOLID	7735-008	GAM		11/18/10	11/23/10	MWT	Gamma Scan
11/10/10		RC-029		7735-008	H		11/15/10	11/18/10	BW	Tritium in Solids
				7735-008	NI_L		11/25/10	12/01/10	BW	Nickel 63 in Solids
				7735-008	PU		11/20/10	11/23/10	BW	Plutonium, Isotopic in Solids
				7735-008	SR		11/18/10	11/29/10	BW	Total Strontium in Solids
				7735-008	U		11/24/10	11/29/10	BW	Uranium, Isotopic in Solids

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	RC-029	Carbon 14 in Solids	C14_COX_LSC	5			1	1	1	8
GAM	RC-029	Gamma Scan	GAMMA_GS	5			1	1	1	8
H	RC-029	Tritium in Solids	TRITIUM_COX_LSC	5			1	1	1	8
NI_L	RC-029	Nickel 63 in Solids	NI63_LSC	5			1	1	1	8
PU	RC-029	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	5			1	1	1	8
SR	RC-029	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	5			1	1	1	8
U	RC-029	Uranium, Isotopic in Solids	UISO_PLATE_AEA	5			1	1	1	8
TOTALS				35			7	7	7	56

Lab id EBRLNE
Protocol Hanford1
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Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-007 Method Blank

METHOD BLANK

SDG	7735	Client/Case no	Hanford	SDG_K2489	
Contact	N.Joseph Verville	Contract	No. S00W235A00		
Lab sample id	S011055-07	Client sample id	Method Blank		
Dept sample id	7735-007	Material/Matrix		SOLID	
		SAF No	RC-029		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.434	2.3	3.94	10.0	U	H
Carbon 14	14762-75-5	0.392	0.45	0.738	1.00	U	C
Nickel 63	13981-37-8	-0.650	1.6	2.80	30.0	U	NI_L
Total Strontium	SR-RAD	0.030	0.18	0.355	1.00	U	SR
Uranium 233/234	U-233/234	0	0.064	0.246	1.00	U	U
Uranium 235	15117-96-1	0	0.078	0.297	1.00	U	U
Uranium 238	U-238	0	0.064	0.246	1.00	U	U
Plutonium 238	13981-16-3	-0.050	0.20	0.479	1.00	U	PU
Plutonium 239/240	PU-239/240	0.050	0.10	0.383	1.00	U	PU
Potassium 40	13966-00-2	U		0.629		U	GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.100	U	GAM
Radium 226	13982-63-3	U		0.090	0.100	U	GAM
Radium 228	15262-20-1	U		0.176	0.200	U	GAM
Europium 152	14683-23-9	U		0.121	0.100	U	GAM
Europium 154	15585-10-1	U		0.105	0.100	U	GAM
Europium 155	14391-16-3	U		0.101	0.100	U	GAM
Thorium 228	14274-82-9	U		0.062		U	GAM
Thorium 232	TH-232	U		0.176		U	GAM
Uranium 235	15117-96-1	U		0.202		U	GAM
Uranium 238	U-238	U		5.74		U	GAM
Americium 241	14596-10-2	U		0.117		U	GAM

QC-BLANK #75983

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-006

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7735

Contact N.Joseph Verville

Client/Case no Hanford SDG K2489

Contract No. S00W235A00

Lab sample id S011055-06

Dept sample id 7735-006

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-029

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	130	5.8	3.79	10.0		H	143	5.7	91	84-116	80-120
Carbon 14	1020	31	6.69	1.00		C	1060	42	96	84-116	80-120
Nickel 63	203	5.9	2.88	30.0		NI_L	218	8.7	93	83-117	80-120
Total Strontium	8.92	0.53	0.236	1.00		SR	8.79	0.35	102	81-119	80-120
Uranium 233/234	9.63	1.3	0.694	1.00		U	9.28	0.37	104	75-125	80-120
Uranium 235	8.26	1.2	0.222	1.00		U	7.54	0.30	110	72-128	80-120
Uranium 238	10.1	1.3	0.663	1.00		U	10.1	0.40	100	76-124	80-120
Plutonium 238	11.4	1.8	0.338	1.00		PU	11.5	0.46	99	73-127	80-120
Plutonium 239/240	12.0	1.8	0.338	1.00		PU	13.2	0.53	91	76-124	80-120
Cobalt 60	1.13	0.11	0.077	0.050		GAM	1.16	0.046	97	81-119	80-120
Cesium 137	1.28	0.093	0.060	0.100		GAM	1.23	0.049	104	83-117	80-120

QC-LCS #75982

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-008 J1CDR4

DUPLICATE

SDG	7735			Client/Case no	Hanford SDG K2489
Contact	N.Joseph Verville			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	S011055-08	Lab sample id	S011055-01	Client sample id	J1CDR4
Dept sample id	7735-008	Dept sample id	7735-001	Location/Matrix	100-K-78 SOLID
		Received	11/10/10	Collected/Weight	11/05/10 09:55 1452 g
% solids	98.4	% solids	98.4	Custody/SAF No	RC-029-095 RC-029

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
Tritium	0.393	2.8	4.75	10.0	U	H	-1.46	2.4	4.25	U	-		1.0
Carbon 14	1.22	0.42	0.678	1.00		C	1.66	0.46	0.728		31	68	1.3
Nickel 63	0.815	2.1	3.51	30.0	U	NI_L	-0.833	1.9	3.39	U	-		1.2
Total Strontium	-0.058	0.10	0.230	1.00	U	SR	-0.023	0.22	0.467	U	-		0.3
Uranium 233/234	0.485	0.23	0.218	1.00		U	0.656	0.28	0.209		30	97	0.9
Uranium 235	0	0.069	0.264	1.00	U	U	0.066	0.066	0.253	U	-		1.4
Uranium 238	0.827	0.29	0.218	1.00		U	0.684	0.28	0.209		19	82	0.7
Plutonium 238	0.043	0.17	0.412	1.00	U	PU	-0.034	0.067	0.257	U	-		0.8
Plutonium 239/240	0	0.086	0.329	1.00	U	PU	0	0.067	0.257	U	-		0
Potassium 40	14.3	0.48	0.179			GAM	14.0	0.68	0.256		2	17	0.4
Cobalt 60	U		0.018	0.050	U	GAM	U		0.032	U	-		0.8
Cesium 137	U		0.017	0.100	U	GAM	U		0.024	U	-		0.5
Radium 226	0.440	0.034	0.028	0.100		GAM	0.452	0.062	0.056		3	28	0.3
Radium 228	0.676	0.10	0.095	0.200		GAM	0.689	0.14	0.134		2	41	0.1
Europium 152	U		0.048	0.100	U	GAM	U		0.068	U	-		0.5
Europium 154	U		0.062	0.100	U	GAM	U		0.104	U	-		0.7
Europium 155	U		0.071	0.100	U	GAM	U		0.079	U	-		0.2
Thorium 228	0.668	0.032	0.027			GAM	0.609	0.036	0.031		9	19	1.5
Thorium 232	0.676	0.10	0.095			GAM	0.689	0.14	0.134		2	41	0.1
Uranium 235	U		0.116		U	GAM	U		0.160	U	-		0.4
Uranium 238	U		2.41		U	GAM	U		3.85	U	-		0.6
Americium 241	U		0.128		U	GAM	U		0.102	U	-		0.3

QC-DUP#1 75984

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-001 J1CDR4

DATA SHEET

SDG	7735	Client/Case no	Hanford	SDG_K2489
Contact	N.Joseph Verville	Contract	No. S00W235A00	
Lab sample id	S011055-01	Client sample id	J1CDR4	
Dept sample id	7735-001	Location/Matrix	100-K-78	SOLID
Received	11/10/10	Collected/Weight	11/05/10 09:55	1452 g
% solids	98.4	Custody/SAF No	RC-029-095	RC-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.46	2.4	4.25	10.0	U	H
Carbon 14	14762-75-5	1.66	0.46	0.728	1.00		C
Nickel 63	13981-37-8	-0.833	1.9	3.39	30.0	U	NI_L
Total Strontium	SR-RAD	-0.023	0.22	0.467	1.00	U	SR
Uranium 233/234	U-233/234	0.656	0.28	0.209	1.00		U
Uranium 235	15117-96-1	0.066	0.066	0.253	1.00	U	U
Uranium 238	U-238	0.684	0.28	0.209	1.00		U
Plutonium 238	13981-16-3	-0.034	0.067	0.257	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.067	0.257	1.00	U	PU
Potassium 40	13966-00-2	14.0	0.68	0.256			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.100	U	GAM
Radium 226	13982-63-3	0.452	0.062	0.056	0.100		GAM
Radium 228	15262-20-1	0.689	0.14	0.134	0.200		GAM
Europium 152	14683-23-9	U		0.068	0.100	U	GAM
Europium 154	15585-10-1	U		0.104	0.100	U	GAM
Europium 155	14391-16-3	U		0.079	0.100	U	GAM
Thorium 228	14274-82-9	0.609	0.036	0.031			GAM
Thorium 232	TH-232	0.689	0.14	0.134			GAM
Uranium 235	15117-96-1	U		0.160		U	GAM
Uranium 238	U-238	U		3.85		U	GAM
Americium 241	14596-10-2	U		0.102		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-002 **J1CDR5**

DATA SHEET

SDG	7735	Client/Case no	Hanford	SDG_K2489
Contact	N.Joseph Verville	Contract	No. S00W235A00	
Lab sample id	S011055-02	Client sample id	J1CDR5	
Dept sample id	7735-002	Location/Matrix	100-K-78	SOLID
Received	11/10/10	Collected/Weight	11/05/10 10:10	1148 g
% solids	98.0	Custody/SAF No	RC-029-095	RC-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.37	2.3	4.14	10.0	U	H
Carbon 14	14762-75-5	1.25	0.42	0.668	1.00		C
Nickel 63	13981-37-8	0.453	1.6	2.76	30.0	U	NI_L
Total Strontium	SR-RAD	0.007	0.12	0.246	1.00	U	SR
Uranium 233/234	U-233/234	0.380	0.22	0.207	1.00		U
Uranium 235	15117-96-1	0.033	0.066	0.251	1.00	U	U
Uranium 238	U-238	0.271	0.16	0.207	1.00		U
Plutonium 238	13981-16-3	0.048	0.19	0.370	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.097	0.370	1.00	U	PU
Potassium 40	13966-00-2	12.5	1.2	0.429			GAM
Cobalt 60	10198-40-0	U		0.053	0.050	U	GAM
Cesium 137	10045-97-3	U		0.063	0.100	U	GAM
Radium 226	13982-63-3	0.379	0.12	0.119	0.100		GAM
Radium 228	15262-20-1	0.640	0.29	0.256	0.200		GAM
Europium 152	14683-23-9	U		0.164	0.100	U	GAM
Europium 154	15585-10-1	U		0.181	0.100	U	GAM
Europium 155	14391-16-3	U		0.187	0.100	U	GAM
Thorium 228	14274-82-9	0.421	0.090	0.087			GAM
Thorium 232	TH-232	0.640	0.29	0.256			GAM
Uranium 235	15117-96-1	U		0.524		U	GAM
Uranium 238	U-238	U		7.29		U	GAM
Americium 241	14596-10-2	U		0.272		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-003 J1CDR6

DATA SHEET

SDG	7735	Client/Case no	Hanford	SDG_K2489	
Contact	N.Joseph Verville	Contract	No. S00W235A00		
Lab sample id	S011055-03	Client sample id	J1CDR6		
Dept sample id	7735-003	Location/Matrix	100-K-78	SOLID	
Received	11/10/10	Collected/Weight	11/05/10 10:15	1158 g	
% solids	98.2	Custody/SAF No	RC-029-095	RC-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.15	2.3	3.98	10.0	U	H
Carbon 14	14762-75-5	1.45	0.42	0.671	1.00		C
Nickel 63	13981-37-8	1.47	1.8	2.92	30.0	U	NI_L
Total Strontium	SR-RAD	0.011	0.22	0.441	1.00	U	SR
Uranium 233/234	U-233/234	0.424	0.26	0.250	1.00		U
Uranium 235	15117-96-1	0	0.079	0.302	1.00	U	U
Uranium 238	U-238	0.555	0.27	0.250	1.00		U
Plutonium 238	13981-16-3	0.150	0.20	0.383	1.00	U	PU
Plutonium 239/240	PU-239/240	0.200	0.20	0.383	1.00	U	PU
Potassium 40	13966-00-2	11.8	1.7	0.845			GAM
Cobalt 60	10198-40-0	U		0.092	0.050	U	GAM
Cesium 137	10045-97-3	U		0.075	0.100	U	GAM
Radium 226	13982-63-3	0.380	0.16	0.172	0.100		GAM
Radium 228	15262-20-1	0.626	0.39	0.388	0.200		GAM
Europium 152	14683-23-9	U		0.193	0.100	U	GAM
Europium 154	15585-10-1	U		0.271	0.100	U	GAM
Europium 155	14391-16-3	U		0.174	0.100	U	GAM
Thorium 228	14274-82-9	0.573	0.089	0.091			GAM
Thorium 232	TH-232	0.626	0.39	0.388			GAM
Uranium 235	15117-96-1	U		0.351		U	GAM
Uranium 238	U-238	U		12.0		U	GAM
Americium 241	14596-10-2	U		0.341		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-004 J1CN20

DATA SHEET

SDG	7735	Client/Case no	Hanford	SDG K2489
Contact	N.Joseph Verville	Contract	No. S00W235A00	
Lab sample id	S011055-04	Client sample id	J1CN20	
Dept sample id	7735-004	Location/Matrix	100-K-78	SOLID
Received	11/10/10	Collected/Weight	11/05/10 09:15	1445 g
% solids	97.1	Custody/SAF No	RC-029-097	RC-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.53	2.2	3.96	10.0	U	H
Carbon 14	14762-75-5	1.48	0.48	0.765	1.00		C
Nickel 63	13981-37-8	1.56	2.4	4.08	30.0	U	NI_L
Total Strontium	SR-RAD	0.118	0.21	0.397	1.00	U	SR
Uranium 233/234	U-233/234	0.819	0.35	0.216	1.00		U
Uranium 235	15117-96-1	0.239	0.21	0.262	1.00	U	U
Uranium 238	U-238	0.932	0.35	0.216	1.00		U
Plutonium 238	13981-16-3	0	0.078	0.297	1.00	U	PU
Plutonium 239/240	PU-239/240	0.039	0.078	0.297	1.00	U	PU
Potassium 40	13966-00-2	14.6	0.60	0.262			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.100	U	GAM
Radium 226	13982-63-3	0.582	0.058	0.055	0.100		GAM
Radium 228	15262-20-1	0.905	0.12	0.122	0.200		GAM
Europium 152	14683-23-9	U		0.072	0.100	U	GAM
Europium 154	15585-10-1	U		0.093	0.100	U	GAM
Europium 155	14391-16-3	U		0.098	0.100	U	GAM
Thorium 228	14274-82-9	0.922	0.037	0.033			GAM
Thorium 232	TH-232	0.905	0.12	0.122			GAM
Uranium 235	15117-96-1	U		0.148		U	GAM
Uranium 238	U-238	U		3.36		U	GAM
Americium 241	14596-10-2	U		0.216		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

7735-005 J1CN21

DATA SHEET

SDG	7735	Client/Case no	Hanford	SDG_K2489
Contact	N.Joseph Verville	Contract	No. S00W235A00	
Lab sample id	S011055-05	Client sample id	J1CN21	
Dept sample id	7735-005	Location/Matrix	100-K-78	SOLID
Received	11/10/10	Collected/Weight	11/05/10 09:35	1384 g
% solids	98.4	Custody/SAF No	RC-029-097	RC-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.44	2.4	4.20	10.0	U	H
Carbon 14	14762-75-5	1.32	0.41	0.646	1.00		C
Nickel 63	13981-37-8	0.566	1.5	2.59	30.0	U	NI_L
Total Strontium	SR-RAD	-0.086	0.14	0.322	1.00	U	SR
Uranium 233/234	U-233/234	0.843	0.32	0.201	1.00		U
Uranium 235	15117-96-1	0.032	0.064	0.244	1.00	U	U
Uranium 238	U-238	0.632	0.27	0.201	1.00		U
Plutonium 238	13981-16-3	0	0.10	0.384	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.10	0.384	1.00	U	PU
Potassium 40	13966-00-2	13.4	0.60	0.240			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.100	U	GAM
Radium 226	13982-63-3	0.369	0.044	0.040	0.100		GAM
Radium 228	15262-20-1	0.692	0.11	0.107	0.200		GAM
Europium 152	14683-23-9	U		0.056	0.100	U	GAM
Europium 154	15585-10-1	U		0.081	0.100	U	GAM
Europium 155	14391-16-3	U		0.063	0.100	U	GAM
Thorium 228	14274-82-9	0.569	0.033	0.028			GAM
Thorium 232	TH-232	0.692	0.11	0.107			GAM
Uranium 235	15117-96-1	U		0.144		U	GAM
Uranium 238	U-238	U		2.94		U	GAM
Americium 241	14596-10-2	U		0.037		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test PU Matrix SOLID
SDG 7735
Contact N.Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K2489

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240	
Preparation batch 7276-165								
S011055-01			7735-001	J1CDR4	U		U	
S011055-02			7735-002	J1CDR5	U		U	
S011055-03			7735-003	J1CDR6	U		U	
S011055-04			7735-004	J1CN20	U		U	
S011055-05			7735-005	J1CN21	U		U	
S011055-06			7735-006	Lab Control Sample	ok		ok	
S011055-07			7735-007	Method Blank	U		U	
S011055-08			7735-008	Duplicate (S011055-01)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.00		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 7276-165			2σ prep error 8.0 %	Reference Lab Notebook No. 7276 pg.165												
S011055-01			J1CDR4	0.257	0.500			73		116			15	11/20/10	11/20	SS-053
S011055-02			J1CDR5	0.370	0.500			50		116			15	11/20/10	11/20	SS-054
S011055-03			J1CDR6	0.383	0.500			53		100			15	11/20/10	11/20	SS-051
S011055-04			J1CN20	0.297	0.500			66		100			15	11/20/10	11/20	SS-052
S011055-05			J1CN21	0.384	0.500			56		101			15	11/20/10	11/20	SS-053
S011055-06			Lab Control Sample	0.338	0.500			63		101				11/20/10	11/20	SS-054
S011055-07			Method Blank	0.479	0.500			46		103				11/20/10	11/20	SS-061
S011055-08			Duplicate (S011055-01)	0.412	0.500			53		104			15	11/20/10	11/20	SS-062
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	SPP-060	Soil Preparation, rev 0
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 8 SAMPLES
MDA 0.365 ± 0.137
YIELD 58 ± 18

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test U Matrix SOLID
SDG 7735
Contact N.Joseph Verville

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K2489

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 7276-165											
S011055-01			7735-001	J1CDR4	0.656	U	0.684	96	57	10	10
S011055-02			7735-002	J1CDR5	0.380	U	0.271	140	116	12	25
S011055-03			7735-003	J1CDR6	0.424	U	0.555	76	60	0	14
S011055-04			7735-004	J1CN20	0.819	U	0.932	88	50	26	25
S011055-05			7735-005	J1CN21	0.843	U	0.632	133	76	5	10
S011055-06			7735-006	Lab Control Sample	ok	ok	ok				
S011055-07			7735-007	Method Blank	U	U	U				
S011055-08			7735-008	Duplicate (S011055-01)	ok	- U	ok	59	35	0	8
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
							Averages	99		9	

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 7276-165			2σ prep error 8.0 %	Reference Lab Notebook No. 7276 pg.165												
S011055-01			J1CDR4	0.253	0.500			88		118			19	11/24/10	11/24	SS-031
S011055-02			J1CDR5	0.251	0.500			85		118			19	11/24/10	11/24	SS-032
S011055-03			J1CDR6	0.302	0.500			75		118			19	11/24/10	11/24	SS-033
S011055-04			J1CN20	0.262	0.500			86		118			19	11/24/10	11/24	SS-034
S011055-05			J1CN21	0.244	0.500			81		123			19	11/24/10	11/24	SS-035
S011055-06			Lab Control Sample	0.694	0.500			89		123				11/24/10	11/24	SS-036
S011055-07			Method Blank	0.297	0.500			67		123				11/24/10	11/24	SS-037
S011055-08			Duplicate (S011055-01)	0.264	0.500			80		123			19	11/24/10	11/24	SS-038
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test	U
Matrix	SOLID
SDG	7735
Contact	N.Joseph Verville

LAB METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. S00W235A00
Contract	SDG K2489

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-060	Soil Preparation, rev 0
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD	MDA	0.321	±	0.304
FOR 8 SAMPLES	YIELD	81	±	15

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test SR Matrix SOLID
SDG 7735
Contact N.Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K2489

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium	
Preparation batch 7276-165						
S011055-01			7735-001	J1CDR4	U	
S011055-02			7735-002	J1CDR5	U	
S011055-03			7735-003	J1CDR6	U	
S011055-04			7735-004	J1CN20	U	
S011055-05			7735-005	J1CN21	U	
S011055-06			7735-006	Lab Control Sample	ok	
S011055-07			7735-007	Method Blank	U	
S011055-08			7735-008	Duplicate (S011055-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.00	

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 7276-165			2σ prep error 10.4 % Reference Lab Notebook No. 7276 pg.165													
S011055-01			J1CDR4	0.467	1.00			40		100			13	11/17/10	11/18	GRB-228
S011055-02			J1CDR5	0.246	1.00			84		100			13	11/17/10	11/18	GRB-229
S011055-03			J1CDR6	0.441	1.00			44		100			13	11/17/10	11/18	GRB-230
S011055-04			J1CN20	0.397	1.00			52		100			13	11/17/10	11/18	GRB-231
S011055-05			J1CN21	0.322	1.00			61		100			13	11/17/10	11/18	GRB-232
S011055-06			Lab Control Sample	0.236	1.00			83		100				11/17/10	11/18	GRB-222
S011055-07			Method Blank	0.355	1.00			57		100				11/17/10	11/18	GRB-201
S011055-08			Duplicate (S011055-01)	0.230	1.00			81		100			13	11/17/10	11/18	GRB-202
Nominal values and limits from method				1.00	1.00			40-110		100			180			

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test SR	Matrix SOLID
SDG 7735	
Contact N.Joseph Verville	

LAB METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford	
Contract No. S00W235A00	
Contract SDG K2489	

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-060	Soil Preparation, rev 0
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 4

AVERAGES ± 2 SD	MDA	0.337	±	0.188
FOR 8 SAMPLES	YIELD	63	±	36

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test GAM Matrix SOLID
SDG 7735
Contact N.Joseph Verville

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K2489

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
Preparation batch 7276-165								
S011055-01			7735-001	J1CDR4	U		U	
S011055-02			7735-002	J1CDR5	U		U	
S011055-03			7735-003	J1CDR6	U		U	
S011055-04			7735-004	J1CN20	U		U	
S011055-05			7735-005	J1CN21	U		U	
S011055-06			7735-006	Lab Control Sample	ok		ok	
S011055-07			7735-007	Method Blank	U		U	
S011055-08			7735-008	Duplicate (S011055-01)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.100	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7276-165			2σ prep error 7.0 %	Reference Lab Notebook No. 7276 pg.165												
S011055-01			J1CDR4	0.200	662					102			12	11/11/10	11/17	02,04,00
S011055-02			J1CDR5	0.563	190					102			12	11/11/10	11/17	JR,08,00
S011055-03			J1CDR6	0.655	196					115			12	11/11/10	11/17	JR,05,00
S011055-04			J1CN20	0.202	630					288			13	11/11/10	11/18	MB,05,00
S011055-05			J1CN21	0.228	715					100			13	11/11/10	11/18	02,01,00
S011055-06			Lab Control Sample	0.077	180					100				11/11/10	11/18	01,02,00
S011055-07			Method Blank	0.355	180					100				11/11/10	11/18	01,04,00
S011055-08			Duplicate (S011055-01)	0.150	662					153			13	11/11/10	11/18	MB,08,00
Nominal values and limits from method				0.050	180					100			180			

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

AVERAGES ± 2 SD FOR 8 SAMPLES
MDA 0.304 ± 0.411
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test C Matrix SOLID
SDG 7735
Contact N.Joseph Verville

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K2489

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7276-165					
S011055-01			7735-001	J1CDR4	1.66
S011055-02			7735-002	J1CDR5	1.25
S011055-03			7735-003	J1CDR6	1.45
S011055-04			7735-004	J1CN20	1.48
S011055-05			7735-005	J1CN21	1.32
S011055-06			7735-006	Lab Control Sample	ok
S011055-07			7735-007	Method Blank	U
S011055-08			7735-008	Duplicate (S011055-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00

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 7276-165			2σ prep error 10.0 % Reference Lab Notebook No. 7276 pg.165													
S011055-01			J1CDR4	0.728	0.627			100		400			10	11/13/10	11/15	LSC-005
S011055-02			J1CDR5	0.668	0.642			100		400			10	11/13/10	11/15	LSC-005
S011055-03			J1CDR6	0.671	0.663			100		400			10	11/13/10	11/15	LSC-005
S011055-04			J1CN20	0.765	0.638			100		400			10	11/13/10	11/15	LSC-005
S011055-05			J1CN21	0.646	0.654			100		400			10	11/13/10	11/15	LSC-005
S011055-06			Lab Control Sample	6.69	0.600			100		5				11/13/10	11/17	LSC-005
S011055-07			Method Blank	0.738	0.600			100		400				11/13/10	11/15	LSC-005
S011055-08			Duplicate (S011055-01)	0.678	0.633			100		400			10	11/13/10	11/15	LSC-005
Nominal values and limits from method				1.00	0.600					10			180			

PROCEDURES REFERENCE C14_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 1.45 ± 4.24
FOR 8 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test H Matrix SOLID
SDG 7735
Contact N.Joseph Verville

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K2489

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7276-165						
S011055-01			7735-001	J1CDR4	U	
S011055-02			7735-002	J1CDR5	U	
S011055-03			7735-003	J1CDR6	U	
S011055-04			7735-004	J1CN20	U	
S011055-05			7735-005	J1CN21	U	
S011055-06			7735-006	Lab Control Sample	ok	
S011055-07			7735-007	Method Blank	U	
S011055-08			7735-008	Duplicate (S011055-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	10.0	

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 7276-165			2σ prep error 10.0 % Reference Lab Notebook No. 7276 pg.165													
S011055-01			J1CDR4	4.25	0.627			100		50			10	11/13/10	11/15	LSC-006
S011055-02			J1CDR5	4.14	0.642			100		50			10	11/13/10	11/15	LSC-006
S011055-03			J1CDR6	3.98	0.663			100		50			10	11/13/10	11/15	LSC-006
S011055-04			J1CN20	3.96	0.638			100		50			10	11/13/10	11/15	LSC-006
S011055-05			J1CN21	4.20	0.654			100		50			10	11/13/10	11/15	LSC-006
S011055-06			Lab Control Sample	3.79	0.600			100		50				11/13/10	11/15	LSC-006
S011055-07			Method Blank	3.94	0.600			100		50				11/13/10	11/15	LSC-006
S011055-08			Duplicate (S011055-01)	4.75	0.633			100		50			10	11/13/10	11/15	LSC-006
Nominal values and limits from method				10.0	0.600					25			180			

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 4.13 ± 0.589
FOR 8 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

Test	NI L Matrix SOLID
SDG	7735
Contact	N.Joseph Verville

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	No. S00W235A00
Contract	SDG K2489

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7276-165						
S011055-01			7735-001	J1CDR4	U	
S011055-02			7735-002	J1CDR5	U	
S011055-03			7735-003	J1CDR6	U	
S011055-04			7735-004	J1CN20	U	
S011055-05			7735-005	J1CN21	U	
S011055-06			7735-006	Lab Control Sample	ok	
S011055-07			7735-007	Method Blank	U	
S011055-08			7735-008	Duplicate (S011055-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	30.0	

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 7276-165			2σ prep error 11.2 % Reference Lab Notebook No. 7276 pg.165													
S011055-01			J1CDR4	3.39	0.500			83		50			20	11/23/10	11/25	LSC-006
S011055-02			J1CDR5	2.76	0.500			101		50			20	11/23/10	11/25	LSC-006
S011055-03			J1CDR6	2.92	0.500			95		50			20	11/23/10	11/25	LSC-006
S011055-04			J1CN20	4.08	0.500			68		50			20	11/23/10	11/25	LSC-006
S011055-05			J1CN21	2.59	0.500			107		50			20	11/23/10	11/25	LSC-006
S011055-06			Lab Control Sample	2.88	0.500			97		50				11/23/10	11/25	LSC-006
S011055-07			Method Blank	2.80	0.500			100		50				11/23/10	11/25	LSC-006
S011055-08			Duplicate (S011055-01)	3.51	0.500			80		50			20	11/23/10	11/25	LSC-006
Nominal values and limits from method				30.0	0.500			40-110		25			180			

PROCEDURES	REFERENCE	NI63_LSC
	SPP-060	Soil Preparation, rev 0
	CP-281	Nickel-63 Purification By Extraction Chromatography, rev 5

AVERAGES ± 2 SD	MDA	3.12	±	1.00
FOR 8 SAMPLES	YIELD	91	±	26

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	12/02/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K2489

SDG	7735
Contact	N.Joseph Verville

REPORT GUIDE

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K2489

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
Version	3.06
Report date	12/02/10

SDG	7735
Contact	N.Joseph Verville

REPORT GUIDE

Client	Hanford
Contract	No. S00W235A00
Case no	SDG K2489

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
Version	3.06
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

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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REPORT GUIDE

Client Hanford
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Case no SDG_K2489

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.

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DATA SHEET

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG	7735
Contact	N.Joseph Verville

REPORT GUIDE

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Contract	No. S00W235A00
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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

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Protocol	Hanford1
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Form	DVD-RG
Version	3.06
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SDG	7735
Contact	N.Joseph Verville

REPORT GUIDE

Client	Hanford
Contract	No. S00W235A00
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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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Protocol	Hanford1
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DUPLICATE

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
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Report date 12/02/10

SDG 7735
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

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 12/02/10

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 7735
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K2489

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
Form DVD-RG
Version 3.06
Report date 12/02/10

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-029-095	Page 1 of 1

Collector Weber	**Company Contact** Matt Perrott	**Telephone No.** 372-9088	**Project Coordinator** KESSNER, JH
Price Code 8C	**Data Turnaround** 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	**Sampling Location** 100-K-78 K2489 (7735)		**SAF No.** RC-029
Ice Chest No. WCH-11-007	**Field Logbook No.** EL-1601-05	**COA** C00K78A000	**Method of Shipment** FEDEX
Shipped To EBERLINE SERVICES / ~~LIONVILLE~~ BH 11/4/10	**Offsite Property No.** A100572		**Bill of Lading/Air Bill No.** SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive < DOT Limits JEB 11-9-10

Special Handling and/or Storage

NONE JEB 11-9-10

Preservation	Cool 4C	Cool 4C BHudson 11/5/10	None	None	None BH 11/4/10						
Type of Container	G/P	G/P	G/P	G/P	G/P						
No. of Container(s)	1	1	1	~~1~~ 0							
Volume	60mL	60mL	~~60mL~~ 1000 mL	~~60mL~~	60g						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	Carbon-14 Low Level; Tritium - H3 Low Level Soil	RCF GEA Shipping Screen						
Sample No.	Matrix *	Sample Date	Sample Time								
J1CDR4	SOIL	11/5/10	0955			X	X				
J1CDR5	SOIL	11/5/10	1010			X	X				
J1CDR6	SOIL	11/5/10	1015			X	X				
~~J1CDR7~~	SOIL										
J1CDR8 BH 11/5/10	SOIL										

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber HW/Heather Weber	11-5-10 1035	BHUDSON BHudson	11/5/10 1035
BHUDSON BHudson	11/5/10 1250	1060 #IC	11/5/10 1250
~~J.E. Berlin~~ J.E. Berlin/1060 IC	0830 11-8-10	~~J.E. Berlin~~ J.E. Berlin	0830 11-8-10
~~J.E. Berlin~~ J.E. Berlin WCH	0930 11-9-10	FED EX	
FED EX		F. MATAWAN	11/10/10 0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) ~~Americium-241~~; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; ~~Technetium-99~~ Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; ~~Total Uranium~~; Gamma Spec (client List);
BH 11/5/10

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

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

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

REVIEWED BY JR DATE 11/9/10

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-097	Page 1 of 1

Collector Weber	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH
Price Code **8C**	Data Turnaround **15 Days**		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-K-78 K2489 (7735)		SAF No. RC-029
Ice Chest No. WCH-11-002	Field Logbook No. EL-1601-05	COA C00K78A000	Method of Shipment FEDEX
Shipped To EBERLINE SERVICES / ~~LIONVILLE~~ BH 11/4/10	Offsite Property No. A100577		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Possible Radiological Contamination
< DOT Limits
JEB 11-9-10

Special Handling and/or Storage

NONE
JEB 11-9-10

Preservation	Cool 4C	Cool 4C	None	None	None						
Type of Container	G/P	~~G/P~~ Plastic	G/P	G/P	G/P						
No. of Container(s)	1	1	1	~~1~~ Ø	~~1~~ Ø	BH 11/4/10					
Volume	60mL	60mL	~~500mL~~ 1000 mL	~~60mL~~	~~60mL~~	BH 11/4/10					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Carbon-14 Low Level; Tritium - H3 Low Level Soil						
Sample No.	Matrix *	Sample Date	Sample Time								
~~J1CN19~~	~~SOIL~~	~~11/5/10~~	BH 11/5/10								
J1CN20	SOIL	11/5/10	0915			X	X	X			
J1CN21	SOIL	11/5/10	0935			X	X	X			

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / HW / Heather Weber	~~11-5-10~~ ~~10-5-2010~~ 1035	BHUDSON BHudson	11/5/10 1035
BHUDSON BHudson BH 11/5/10	11/5/10 1250	1060 #1C	11/5/10 1250
J.E. Beulel / 1060 1C	11-8-10 0830	J.E. Beulel	11-8-10 0830
J.E. Beulel WCH	11-9-10 0930	FED EX	
FED EX		F. MATAWAN	11/10/10 0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Gross Alpha & Gross Beta~~
(3) ~~Americium-241~~; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; ~~Technetium-99 Low Level~~; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; ~~Total Uranium~~

BH 11/4/10

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

REVIEWED BY JR
DATE 11/9/10

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

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

WCH-EE-011

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City RICHLAND State WA

Date/Time received 11/10/10 09 30 CoC No. RC-029-097

Container I.D. No. WCH-11-007 Requested TAT (Days) 15 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: 5 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 N/A Preservative _____
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by [signature] Date: 11/10/10 Time: 1015

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
All Samples	LBD						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100482 Calibration date 24 SEP 10

November 29, 2010

Joan Kessner
WCH
2620 Fermi Avenue
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1011068
SDG #	K2489
SAF #	RC-029
Date Received	11/10/10
Matrix	Soil
SVOA	
Metals	X
Inorganics	X
Pesticides	
VOA	
PCB	
PAH	
DRO	

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

Sincerely,

Orlette S. Johnson
Lionville Laboratory Incorporated

LIONVILLE LABORATORY
A division of Baseline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

RECEIVED
NOV 2010

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K2489 Project Manager: Joan Kessner	**Reported:** 11/24/2010 11:20

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1CN19	1011068-01	Soil	11/05/2010 08:30	11/10/2010 09:45
J1CN20	1011068-02	Soil	11/05/2010 09:15	11/10/2010 09:45
J1CN21	1011068-03	Soil	11/05/2010 09:35	11/10/2010 09:45
J1CDR4	1011068-04	Soil	11/05/2010 09:55	11/10/2010 09:45
J1CDR5	1011068-05	Soil	11/05/2010 10:10	11/10/2010 09:45
J1CDR6	1011068-06	Soil	11/05/2010 10:15	11/10/2010 09:45

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-029 K2489
LVL#: 1011068 **Date Received:** 11-10-10

INORGANIC NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report.

   Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvL's sample acceptance policy.

5. The method blank for Hexavalent Chromium (Cr^{6+}) was within the method criteria.

6. The Laboratory Control Samples (LCS) for Cr^{6+} were within the laboratory control limits.

7. The matrix spike recoveries for Cr^{6+} were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for soil samples are reported on a dry weight basis.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

11/30/10
Date

njp\il1-068

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

264 Welsh Pool Road
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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/24/2010 11:20

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
Dry	Sample results reported on a dry weight basis
Wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/24/2010 11:20

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1CN19 (1011068-01) Soil									
%Solids	**99.9**	0.1	0.1	% by Weight	1	L011214	11/12/2010	11/12/2010	EPA 160.6
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg dry	1	L011283	11/16/2010	11/16/2010	SW846 7196A
J1CN20 (1011068-02) Soil									
%Solids	**97.5**	0.1	0.1	% by Weight	1	L011214	11/12/2010	11/12/2010	EPA 160.6
Hexavalent Chromium	0.21 U	0.21	0.51	mg/kg dry	1	L011283	11/16/2010	11/16/2010	SW846 7196A
J1CN21 (1011068-03) Soil									
%Solids	**98.6**	0.1	0.1	% by Weight	1	L011214	11/12/2010	11/12/2010	EPA 160.6
Hexavalent Chromium	0.20 U	0.20	0.51	mg/kg dry	1	L011283	11/16/2010	11/16/2010	SW846 7196A
J1CDR4 (1011068-04) Soil									
%Solids	**98.2**	0.1	0.1	% by Weight	1	L011214	11/12/2010	11/12/2010	EPA 160.6
Hexavalent Chromium	0.20 U	0.20	0.51	mg/kg dry	1	L011283	11/16/2010	11/16/2010	SW846 7196A
J1CDR5 (1011068-05) Soil									
%Solids	**98.0**	0.1	0.1	% by Weight	1	L011214	11/12/2010	11/12/2010	EPA 160.6
Hexavalent Chromium	0.20 U	0.20	0.51	mg/kg dry	1	L011283	11/16/2010	11/16/2010	SW846 7196A
J1CDR6 (1011068-06) Soil									
%Solids	**97.8**	0.1	0.1	% by Weight	1	L011214	11/12/2010	11/12/2010	EPA 160.6
Hexavalent Chromium	0.20 U	0.20	0.51	mg/kg dry	1	L011283	11/16/2010	11/16/2010	SW846 7196A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/24/2010 11:20

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L011214 - % Solids										
Duplicate (L011214-DUP5)	**Source: 1011068-06**			Prepared & Analyzed: 11/12/2010						
%Solids	97.8	0.1	0.1	% by Weight		97.8			0	20
Batch L011283 - Default Prep										
Blank (L011283-BLK1)				Prepared & Analyzed: 11/16/2010						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L011283-BS1)				Prepared & Analyzed: 11/16/2010						
Hexavalent Chromium	4.06	0.20	0.50	mg/kg wet	4.0000		102	80-120		
LCS (L011283-BS2)				Prepared & Analyzed: 11/16/2010						
Hexavalent Chromium	993 D	20.0	50.0	mg/kg wet	1024.0		97	80-120		
Duplicate (L011283-DUP2)	**Source: 1011068-01**			Prepared & Analyzed: 11/16/2010						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg dry		0.20 U				20
Matrix Spike (L011283-MS3)	**Source: 1011068-01**			Prepared & Analyzed: 11/16/2010						
Hexavalent Chromium	4.13	0.20	0.50	mg/kg dry	4.0020	0.20 U	103	75-125		
Matrix Spike (L011283-MS4)	**Source: 1011068-01**			Prepared & Analyzed: 11/16/2010						
Hexavalent Chromium	999 D	20.0	50.0	mg/kg dry	985.82	0.20 U	101	75-125		

Lionville Laboratory Use Only
1011068

Custody Transfer Record/Lab Work Request

Page 1 of 1

SAE SRC

VLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: WC Hanford SAF# RC-029

Est. Final Proj. Sampling Date:

Project#:

Project Contact/Phone#:

Lionville Laboratory Project Manager: O. Johnson

QC: SW Del: STD TAT: 15 Day

Date Rec'd: 11-10-10 Date Due: 11-25-10

Refrigerator #								A							
#/Type Container	Liquid							1							
	Solid							1							
Volume								250							
Preservatives															
ANALYSES REQUESTED →		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb			Metal	Hg	CN	Cr+6				

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	Lionville Laboratory Use Only														
														Met		CRL					
01	J1CN19			Soil	11-5-10	0830								X		X					
02	20					0915								X		X					
03	21					0935								X		X					
04	J1CDR4			Soil	11-5-10	0955								X		X					
05	5					1010								X		X					
06	6					1015								X		X					

Special Instructions:

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

Relinquished by	Received by	Date	Time
FedEx	[signature]	11/10/10	0945

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN			

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-097	Page 1 of 1

Collector: Weber	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 100-K-78		SAF No.: RC-029
Ice Chest No.: ERC-96-069	Field Logbook No.: EL-1601-05	COA: C00K78A000	Method of Shipment: FEDEX
Shipped To: BH 11/4/10 ~~EBERLINE SERVICES~~ / LIONVILLE	Offsite Property No.: A100613		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Possible Radiological Contamination <DOT Limits JRB 11-9-10

Special Handling and/or Storage

Cool 4°C JRB 11-9-10

Preservation	Cool 4C	Cool 4C	None	None	None						
Type of Container	G/P	G/P	G/P	G/P	G/P						
No. of Container(s)	1	1 BH 11/4/10	1	1	1						
Volume	~~60mL~~ 250 mL BH 11/4/10	~~60mL~~	500mL	~~60mL~~ BHudson 11/4/10	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Carbon-14 Low Level; Tritium - H3 Low Level Soil						
Sample No.	Matrix *	Sample Date	Sample Time								
EB J1CN19	SOIL	11/5/10	0830	X	X						
1 J1CN20	SOIL	11/5/10	0915	X	X						
2 J1CN21	SOIL	11/5/10	0935	X	X						

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Heather Wicker HW/Heather C. Wicker	11-5-2010 1025	BHUDSON BHudson	11/5/10 1035
Relinquished By/Removed From	BHUDSON BHudson	11/5/10 1250	1060 #1C	11/5/10 1250
Relinquished By/Removed From	J.E. Benbel / 1060 1C	11-8-10 0830	Received By/Stored In: J.E. Benbel	11-8-10 0830
Relinquished By/Removed From	J.E. Benbel	11-9-10 0930	Received By/Stored In: FED EX	
Relinquished By/Removed From	FED EX	11-10-10 0945	Received By/Stored In: VICTOR HERNANDEZ	11-10-10 0945
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta.
(3) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

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

REVIEWED BY JR DATE 11/9/10

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

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

WCH-EE-011

000000007

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-095	Page 1 of 1

Collector Weber	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-K-78		SAF No. RC-029
Ice Chest No. ERC-96-0069	Field Logbook No. EL-1601-05	COA C00K78A000	Method of Shipment FEDEX
Shipped To BH 11/4/10 ~~EBERLINE SERVICES~~ / LIONVILLE	Offsite Property No. A100613		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive cDOT Limits JEO 11-9-10

Special Handling and/or Storage

Cool 4°C JEO 11-9-10

Preservation	Cool 4C	Cool 4C	None	None	None	
Type of Container	G/P	G/P	G/P	G/P	G/P	
No. of Container(s)	1	~~1~~ BH 11/4/10 0	1	1	1	
Volume BH 11/4/10	~~60mL~~ 250mL	~~60mL~~	60mL	~~60mL~~	60g	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	Carbon-14 Low Level; Tritium - H3 Low Level Soil	RCF GEA Shipping Screen	

	Sample No.	Matrix *	Sample Date	Sample Time										
3	J1CDR4	SOIL	11/5/10	0955	X	X								
4	J1CDR5	SOIL	11/5/10	1010	X	X								
5	J1CDR6	SOIL	11/5/10	1015	X	X								
	~~J1CDR7~~	SOIL												
	~~J1CDR8~~ BH 11/5/10	SOIL												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: Heather Wieber HW/Heather Wieber	Received By/Stored In: BHudson BHudson	11-5-10 1035 / 11/5/10 1035
Relinquished By/Removed From: BHudson BHudson	Received By/Stored In: 1060 #1C	11/5/10 1250 / 11/5/10 1250
Relinquished By/Removed From: J.E. Benton / 1060 1C	Received By/Stored In: J.E. Benton	11-8-10 0830 / 11-8-10 0830
Relinquished By/Removed From: J.E. Benton	Received By/Stored In: FED EX	11-9-10 0930
Relinquished By/Removed From: FED EX	Received By/Stored In: VICTOR HERNANDEZ	11-10-10 0945 / 11-10-10 0945
Relinquished By/Removed From	Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

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

REVIEWED BY JR DATE 11/9/10

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

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

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford

Project/SAF/SOW/Release #: RC-029

Date: 11/10/10

LvL Batch #: 1011068

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 794098429653
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 3.1	°C	Cooler # ERC-96-069
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify)
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) 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 LvL 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 _____

LIONVILLE LABORATORY
A division of Fremont Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

RECEIVED
NOV 2010

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K2489 Project Manager: Joan Kessner	Reported: 11/23/2010 16:55

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1CN19	1011068-01	Soil	11/05/2010 08:30	11/10/2010 09:45
J1CN20	1011068-02	Soil	11/05/2010 09:15	11/10/2010 09:45
J1CN21	1011068-03	Soil	11/05/2010 09:35	11/10/2010 09:45
J1CDR4	1011068-04	Soil	11/05/2010 09:55	11/10/2010 09:45
J1CDR5	1011068-05	Soil	11/05/2010 10:10	11/10/2010 09:45
J1CDR6	1011068-06	Soil	11/05/2010 10:15	11/10/2010 09:45

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Exton, Pennsylvania 19341
Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-029
LVL#: 1011068
SDG/SAF#: K2489/RC-029

W.O.#: 60049-001-001-0001-00
Date Received: 11-10-10

METALS

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 6 soil samples.

2. The samples were prepared and analyzed in accordance with methods listed on the data report forms.

   To accommodate the data reporting system, samples J1CN19, J1CN20, J1CN21, J1CDR4, J1CDR5, and J1CDR6 digested in batch L011202, were moved to digestion batch L011333.

3. All analyses were performed within the required holding times.

4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), or samples greater than 20X MB value}.

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.

10. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits.

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 24 pages.

11. 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
J1CN20	Aluminum	22,000	90.0
	Antimony	100	97.4
	Iron	42,000	72.8
	Manganese	1,000	89.7

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL.

13. For the purposes of this report, the data have 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.

14. 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.

15. 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.

Alain Daniels
Laboratory Manager
Lionville Laboratory

11/24/10
Date

alm/11-068

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

Notes and Definitions

U	Analyte included in the analysis, but not detected
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
B	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag)
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

J1CN19
1011068-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**168**		3.57	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Antimony	0.429	U	0.429	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Arsenic	**0.254**	B	0.715	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Barium	**1.56**		0.357	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Beryllium	**0.0405**	B	0.143	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Boron	1.43	U	1.43	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cadmium	0.143	U	0.143	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Calcium	**34.7**	B	71.5	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Chromium	0.143	U	0.143	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cobalt	1.43	U	1.43	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Copper	0.715	U	0.715	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Iron	**225**		14.3	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Lead	**0.458**		0.357	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Magnesium	**19.1**	B	53.6	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Manganese	**4.89**		3.57	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Molybdenum	1.43	U	1.43	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Nickel	2.86	U	2.86	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Potassium	**59.3**	B	286	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Selenium	0.214	U	0.214	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silicon	**132**		1.43	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silver	0.143	U	0.143	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Sodium	**9.96**	B	35.7	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Vanadium	**0.316**	B	1.79	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Zinc	**0.810**	B	7.15	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Mercury	0.0265	U	0.0265	mg/kg dry	1	L011249	11/17/2010	11/17/2010	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

J1CN20
1011068-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**10800**		4.20	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Antimony	**0.334**	B	0.504	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Arsenic	**4.33**		0.841	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Barium	**85.3**		0.420	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Beryllium	**0.357**		0.168	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Boron	**0.683**	B	1.68	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cadmium	**0.0921**	B	0.168	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Calcium	**3370**		84.1	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Chromium	**27.2**		0.168	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cobalt	**4.91**		1.68	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Copper	**19.5**		0.841	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Iron	**19600**		16.8	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Lead	**4.68**		0.420	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Magnesium	**5080**		63.1	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Manganese	**208**		4.20	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Molybdenum	**0.252**	B	1.68	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Nickel	**14.1**		3.36	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Potassium	**904**		336	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Selenium	0.252	U	0.252	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silicon	**833**		1.68	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silver	0.168	U	0.168	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Sodium	**178**		42.0	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Vanadium	**42.9**		2.10	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Zinc	**36.9**		8.41	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Mercury	0.0288	U	0.0288	mg/kg dry	1	L011249	11/17/2010	11/18/2010	7471A

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

J1CN21
1011068-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**7330**		3.90	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Antimony	**0.391**	B	0.468	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Arsenic	**2.15**		0.780	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Barium	**63.7**		0.390	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Beryllium	**0.213**		0.156	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Boron	**0.540**	B	1.56	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cadmium	**0.0577**	B	0.156	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Calcium	**2860**		78.0	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Chromium	**13.9**		0.156	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cobalt	**2.99**		1.56	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Copper	**12.1**		0.780	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Iron	**13400**		15.6	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Lead	**2.70**		0.390	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Magnesium	**3970**		58.5	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Manganese	**184**		3.90	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Molybdenum	**0.162**	B	1.56	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Nickel	**7.77**		3.12	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Potassium	**1140**		312	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Selenium	0.234	U	0.234	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silicon	**844**		1.56	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silver	0.156	U	0.156	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Sodium	**160**		39.0	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Vanadium	**29.8**		1.95	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Zinc	**32.8**		7.80	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Mercury	0.0277	U	0.0277	mg/kg dry	1	L011249	11/17/2010	11/18/2010	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

J1CDR4
1011068-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**7020**		4.31	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Antimony	0.518	U	0.518	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Arsenic	**2.17**		0.863	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Barium	**67.1**		0.431	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Beryllium	**0.234**		0.173	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Boron	**0.484**	B	1.73	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cadmium	**0.0492**	B	0.173	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Calcium	**2620**		86.3	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Chromium	**14.6**		0.173	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cobalt	**3.44**		1.73	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Copper	**13.2**		0.863	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Iron	**13300**		17.3	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Lead	**3.63**		0.431	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Magnesium	**4190**		64.7	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Manganese	**182**		4.31	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Molybdenum	1.73	U	1.73	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Nickel	**9.65**		3.45	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Potassium	**996**		345	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Selenium	0.259	U	0.259	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silicon	**393**		1.73	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silver	0.173	U	0.173	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Sodium	**125**		43.1	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Vanadium	**28.2**		2.16	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Zinc	**31.0**		8.63	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Mercury	0.0296	U	0.0296	mg/kg dry	1	L011249	11/17/2010	11/18/2010	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K2489 Project Manager: Joan Kessner	Reported: 11/23/2010 16:55

J1CDR5
1011068-05 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5760**		3.19	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Antimony	**0.262**	B	0.383	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Arsenic	**1.46**		0.638	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Barium	**46.4**		0.319	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Beryllium	**0.197**		0.128	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Boron	**0.379**	B	1.28	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cadmium	**0.0452**	B	0.128	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Calcium	**2320**		63.8	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Chromium	**11.0**		0.128	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cobalt	**3.09**		1.28	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Copper	**12.3**		0.638	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Iron	**11100**		12.8	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Lead	**2.70**		0.319	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Magnesium	**3490**		47.8	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Manganese	**162**		3.19	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Molybdenum	1.28	U	1.28	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Nickel	**8.37**		2.55	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Potassium	**895**		255	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Selenium	0.191	U	0.191	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silicon	**328**		1.28	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silver	0.128	U	0.128	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Sodium	**113**		31.9	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Vanadium	**22.9**		1.59	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Zinc	**29.2**		6.38	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Mercury	0.0296	U	0.0296	mg/kg dry	1	L011249	11/17/2010	11/18/2010	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

J1CDR6

1011068-06 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5750**		3.70	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Antimony	**0.388**	B	0.444	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Arsenic	**1.53**		0.741	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Barium	**51.7**		0.370	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Beryllium	**0.178**		0.148	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Boron	**0.409**	B	1.48	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cadmium	**0.0458**	B	0.148	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Calcium	**2360**		74.1	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Chromium	**10.5**		0.148	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Cobalt	**3.06**		1.48	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Copper	**10.7**		0.741	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Iron	**11400**		14.8	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Lead	**2.50**		0.370	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Magnesium	**3620**		55.5	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Manganese	**149**		3.70	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Molybdenum	1.48	U	1.48	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Nickel	**8.23**		2.96	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Potassium	**827**		296	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Selenium	0.222	U	0.222	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silicon	**718**		1.48	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Silver	0.148	U	0.148	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Sodium	**110**		37.0	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Vanadium	**23.4**		1.85	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Zinc	**25.1**		7.41	mg/kg dry	1	L011333	11/12/2010	11/19/2010	6010B
Mercury	0.0230	U	0.0230	mg/kg dry	1	L011249	11/17/2010	11/18/2010	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L011249 - SW 7471A Prep										
Blank (L011249-BLK1)				Prepared & Analyzed: 11/17/2010						
Mercury	0.0257	U	0.0257	mg/kg wet						
Duplicate (L011249-DUP2)		Source: 1011068-02		Prepared: 11/17/2010 Analyzed: 11/18/2010						
Mercury	0.0280	U	0.0280	mg/kg dry		0.0288 U				20
Matrix Spike (L011249-MS2)		Source: 1011068-02		Prepared: 11/17/2010 Analyzed: 11/18/2010						
Mercury	0.180		0.0280	mg/kg dry	0.15542	0.0288 U	116	75-125		
Reference (L011249-SRM1)				Prepared & Analyzed: 11/17/2010						
Mercury	1.31		0.0290	mg/kg wet	1.2600		104	65.9-133.3		
Batch L011333 - SW 3050B										
Blank (L011333-BLK1)				Prepared: 11/12/2010 Analyzed: 11/19/2010						
Aluminum	5.07		4.72	mg/kg wet						
Antimony	0.566	U	0.566	mg/kg wet						
Arsenic	0.943	U	0.943	mg/kg wet						
Barium	0.472	U	0.472	mg/kg wet						
Beryllium	0.189	U	0.189	mg/kg wet						
Boron	1.89	U	1.89	mg/kg wet						
Cadmium	0.189	U	0.189	mg/kg wet						
Calcium	7.41	B	94.3	mg/kg wet						
Chromium	0.189	U	0.189	mg/kg wet						
Cobalt	1.89	U	1.89	mg/kg wet						
Copper	0.943	U	0.943	mg/kg wet						
Iron	18.9	U	18.9	mg/kg wet						
Lead	0.472	U	0.472	mg/kg wet						
Magnesium	70.8	U	70.8	mg/kg wet						
Manganese	4.72	U	4.72	mg/kg wet						
Molybdenum	1.89	U	1.89	mg/kg wet						
Nickel	3.77	U	3.77	mg/kg wet						
Potassium	377	U	377	mg/kg wet						
Selenium	0.283	U	0.283	mg/kg wet						
Silicon	1.89	U	1.89	mg/kg wet						
Silver	0.189	U	0.189	mg/kg wet						
Sodium	11.2	B	47.2	mg/kg wet						
Vanadium	2.36	U	2.36	mg/kg wet						
Zinc	9.43	U	9.43	mg/kg wet						

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L011333 - SW 3050B										
Duplicate (L011333-DUP2)		**Source: 1011068-02**		Prepared: 11/12/2010 Analyzed: 11/19/2010						
Aluminum	11200		4.35	mg/kg dry		10800			3	20
Antimony	0.522	U	0.522	mg/kg dry		0.334				20
Arsenic	4.04		0.869	mg/kg dry		4.33			7	20
Barium	85.6		0.435	mg/kg dry		85.3			0.4	20
Beryllium	0.312		0.174	mg/kg dry		0.357			13	20
Boron	0.579	B	1.74	mg/kg dry		0.683			17	20
Cadmium	0.0827	B	0.174	mg/kg dry		0.0921			11	20
Calcium	3330		86.9	mg/kg dry		3370			1	20
Chromium	30.8		0.174	mg/kg dry		27.2			13	20
Cobalt	5.32		1.74	mg/kg dry		4.91			8	20
Copper	19.3		0.869	mg/kg dry		19.5			1	20
Iron	20300		17.4	mg/kg dry		19600			4	20
Lead	4.30		0.435	mg/kg dry		4.68			8	20
Magnesium	5600		65.2	mg/kg dry		5080			10	20
Manganese	208		4.35	mg/kg dry		208			0.3	20
Molybdenum	0.235	B	1.74	mg/kg dry		0.252			7	20
Nickel	16.8		3.48	mg/kg dry		14.1			17	20
Potassium	1260		348	mg/kg dry		904			33*	20
Selenium	0.261	U	0.261	mg/kg dry		0.252 U				20
Silicon	605		1.74	mg/kg dry		833			32*	20
Silver	0.174	U	0.174	mg/kg dry		0.168 U				20
Sodium	169		43.5	mg/kg dry		178			5	20
Vanadium	44.8		2.17	mg/kg dry		42.9			4	20
Zinc	37.0		8.69	mg/kg dry		36.9			0.1	20
Matrix Spike (L011333-MS2)		**Source: 1011068-02**		Prepared: 11/12/2010 Analyzed: 11/19/2010						
Aluminum	11600		3.83	mg/kg dry	153.10	10800	549*	75-125		
Antimony	15.1		0.459	mg/kg dry	38.274	0.334	39*	75-125		
Arsenic	139		0.765	mg/kg dry	153.10	4.33	88	75-125		
Barium	230		0.383	mg/kg dry	153.10	85.3	95	75-125		
Beryllium	3.83		0.153	mg/kg dry	3.8274	0.357	91	75-125		
Boron	63.8		1.53	mg/kg dry	76.549	0.683	82	75-125		
Cadmium	3.80		0.153	mg/kg dry	3.8274	0.0921	97	75-125		
Calcium	5290		76.5	mg/kg dry	1913.7	3370	100	75-125		
Chromium	40.7		0.153	mg/kg dry	15.310	27.2	88	75-125		
Cobalt	38.7		1.53	mg/kg dry	38.274	4.91	88	75-125		
Copper	35.8		0.765	mg/kg dry	19.137	19.5	85	75-125		

LIONVILLE LABORATORY
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K2489 Project Manager: Joan Kessner	Reported: 11/23/2010 16:55

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L011333 - SW 3050B									
Matrix Spike (L011333-MS2)		**Source: 1011068-02**		Prepared: 11/12/2010 Analyzed: 11/19/2010					
Iron	20000	15.3	mg/kg dry	76.549	19600	572*	75-125		
Lead	36.6	0.383	mg/kg dry	38.274	4.68	83	75-125		
Magnesium	6720	57.4	mg/kg dry	1913.7	5080	85	75-125		
Manganese	272	3.83	mg/kg dry	38.274	208	169*	75-125		
Molybdenum	67.6	1.53	mg/kg dry	76.549	0.252	88	75-125		
Nickel	47.3	3.06	mg/kg dry	38.274	14.1	87	75-125		
Potassium	2670	306	mg/kg dry	1913.7	904	92	75-125		
Selenium	132	0.230	mg/kg dry	153.10	0.252 U	86	75-125		
Silicon	919	1.53	mg/kg dry	76.549	833	112	75-125		
Silver	3.22	0.153	mg/kg dry	3.8274	0.168 U	84	75-125		
Sodium	2020	38.3	mg/kg dry	1913.7	178	96	75-125		
Vanadium	78.4	1.91	mg/kg dry	38.274	42.9	93	75-125		
Zinc	68.0	7.65	mg/kg dry	38.274	36.9	81	75-125		
Reference (L011333-SRM1)				Prepared: 11/12/2010 Analyzed: 11/19/2010					
Aluminum	6870	10.7	mg/kg wet	6766.6		102	0-225.5		
Antimony	44.9	1.29	mg/kg wet	56.630		79	0-225.6		
Arsenic	116	2.14	mg/kg wet	113.85		102	85-115		
Barium	306	1.07	mg/kg wet	298.35		102	75.7-124.3		
Beryllium	110	0.429	mg/kg wet	108.32		102	85.2-114.8		
Boron	85.5	4.29	mg/kg wet	86.580		99	68.5-131.6		
Cadmium	233	0.429	mg/kg wet	224.09		104	84.9-115.1		
Calcium	3410	214	mg/kg wet	3305.9		103	82.8-117.2		
Chromium	81.9	0.429	mg/kg wet	77.590		106	76.8-123.2		
Cobalt	170	4.29	mg/kg wet	163.19		104	79.4-120.6		
Copper	261	2.14	mg/kg wet	265.65		98	82.4-117.6		
Iron	8320	42.9	mg/kg wet	8202.8		101	78.9-121.1		
Lead	191	1.07	mg/kg wet	187.62		102	81.5-118.5		
Magnesium	8710	161	mg/kg wet	8352.3		104	84.2-115.8		
Manganese	938	10.7	mg/kg wet	951.35		99	69-131		
Molybdenum	242	4.29	mg/kg wet	234.78		103	80.1-119.9		
Nickel	227	8.57	mg/kg wet	220.85		103	81.4-118.6		
Potassium	14600	857	mg/kg wet	14177		103	85.7-114.3		
Selenium	193	0.643	mg/kg wet	187.99		103	78.8-121.2		
Silicon	636	4.29	mg/kg wet	939.78		68	0-272.3		
Silver	83.2	0.429	mg/kg wet	83.960		99	81.9-118.1		
Sodium	9620	107	mg/kg wet	9587.1		100	83.5-116.4		

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K2489	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2010 16:55

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L011333 - SW 3050B									
Reference (L011333-SRM1)			Prepared: 11/12/2010 Analyzed: 11/19/2010						
Vanadium	103	5.36	mg/kg wet	97.430		106	75.8-124.2		
Zinc	201	21.4	mg/kg wet	196.52		102	78.9-121.1		

Lionville Laboratory **Logbook #:** 837

SAMPLE DIGESTION RECORD

Digestion Batch #: L011202
Date/Time Initiated: 11/12/10 1140
Date/Time Completed: 11/12/10 1550
Analyst: JJS
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)

Digested Undigested (circle one)
Balance #: B14
Balance Cal Verification: Y NA
Temp: 96
BLOCK 1 3 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1010086-01		0.64	50		TO	Fine	Brown		N/A
L011202-Dp1		0.53	50						
1011056-01		0.59	50			Fine	Brown		
L011202-Dp2		0.72	50						
-MS1	0.5	0.52	50						
1011067-01		0.72	50			Coarse	Brown	Rocks	
L011202-Dp3		0.76	50						
-MS2	0.5	0.60	50						
1011067-02		0.53	50			Coarse	Brown	Rocks	
1011068-01		0.70	50			Coarse	Brown Sand		
-02		0.61	50			Fine	Brown	Rocks	
L011202-Dp4		0.59	50						
-MS3	0.5	0.67	50						
1011068-03		0.65	50			Fine	Brown	Rocks	
-04		0.59	50			Fine	Brown	Rocks	
-05		0.80	50			Fine	Brown	Rocks	
-06		0.69	50			Fine	Brown	Rocks	
1011090-01		0.68	50			Fine	Black	H_2O/veg	
L011202-Dp5		0.69	50						
-MS4	0.5	0.66	50						
1011096-02		0.59	50			Fine	Black	H_2O/veg	
-03		0.59	50			Fine	Black	H_2O/veg	
L011202 MB1		0.53	50			Coarse	Boiling Chips		
SRM1		0.70	50			Fine	destroyed sand		
									JJS 11/12/10

Spiking IDs / Expiration Date:
MS#: 8100-09-16
-17
-18
6072-087-14
LCS#: 1001320

Reagent IDs:
HNO_3 J19023
HCl J35042
H_2O_2 H28J00
1:1 HNO_3 637-085-03
1:1 HCl

File ID#:

Data Review By / Date: 11/16/10

R:\group\QA\SOP\
Signed\SPI\Metals Digestion log.doc

Page #:

000000015

PREPARATION BENCH SHEET

L011202

Lionville Laboratory

Printed: 11/23/2010 7:00:46AM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1010086-01	6010B HSL Metals	11/12/2010 11:00	0.64	50					LQA	
1010086-01	6010B ICP Metals	11/12/2010 11:00	0.64	50					LQA	Added for BatchQC in: L011202
1010086-01	6010B ICP Trace	11/12/2010 11:00	0.64	50					LQA	Added for BatchQC in: L011202
1010086-01	6010B RCRA ICP METALS	11/12/2010 11:00	0.64	50					LQA	Added for BatchQC in: L011202
1011056-01	6010B HSL Metals	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011056-01	6010B ICP Metals	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011056-01	6010B ICP Trace	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011056-01	6010B RCRA ICP METALS	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011067-01	6010B HSL Metals	11/12/2010 11:00	0.72	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011067-01	6010B ICP Metals	11/12/2010 11:00	0.72	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011067-01	6010B ICP Trace	11/12/2010 11:00	0.72	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011067-01	6010B RCRA ICP METALS	11/12/2010 11:00	0.72	50					WC-Hanford, Inc.	RCRA list
1011067-02	6010B RCRA ICP METALS	11/12/2010 11:00	0.53	50					WC-Hanford, Inc.	RCRA list
1011068-01	6010B ICP Metals	11/12/2010 11:00	0.7	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-02	6010B HSL Metals	11/12/2010 11:00	0.61	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011068-02	6010B ICP Metals	11/12/2010 11:00	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-02	6010B ICP Trace	11/12/2010 11:00	0.61	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011068-02	6010B RCRA ICP METALS	11/12/2010 11:00	0.61	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011068-03	6010B ICP Metals	11/12/2010 11:00	0.65	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-04	6010B ICP Metals	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)

Extracts Relinquished By Date

Extracts Received By Date

PREPARATION BENCH SHEET

L011202

Lionville Laboratory

Printed: 11/23/2010 7:00:46AM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1011068-05	6010B ICP Metals	11/12/2010 11:00	0.8	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-06	6010B ICP Metals	11/12/2010 11:00	0.69	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011090-01	6010B HSL Metals	11/12/2010 11:00	0.68	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011090-01	6010B ICP Metals	11/12/2010 11:00	0.68	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011090-01	6010B ICP Trace	11/12/2010 11:00	0.68	50					WC-Hanford, Inc.	
1011090-01	6010B RCRA ICP METALS	11/12/2010 11:00	0.68	50					WC-Hanford, Inc.	Added for BatchQC in: L011202
1011090-02	6010B ICP Trace	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	
1011090-03	6010B ICP Trace	11/12/2010 11:00	0.59	50					WC-Hanford, Inc.	
L011202-BLK1	QC	11/12/2010 11:00	0.53	50						
L011202-DUP1	QC	11/12/2010 11:00	0.53	50		1010086-01				
L011202-DUP2	QC	11/12/2010 11:00	0.72	50		1011056-01				
L011202-DUP3	QC	11/12/2010 11:00	0.76	50		1011067-01				
L011202-DUP4	QC	11/12/2010 11:00	0.59	50		1011068-02				
L011202-DUP5	QC	11/12/2010 11:00	0.69	50		1011090-01				
L011202-MS1	QC	11/12/2010 11:00	0.52	50	1001843	1011056-01	500			
L011202-MS2	QC	11/12/2010 11:00	0.6	50	1001843	1011067-01	500			
L011202-MS3	QC	11/12/2010 11:00	0.67	50	1001843	1011068-02	500			
L011202-MS4	QC	11/12/2010 11:00	0.66	50	1001843	1011090-01	500			
L011202-SRM1	QC	11/12/2010 11:00	0.7	50	1001320		700			

Extracts Relinquished By Date Extracts Received By Date

PREPARATION BENCH SHEET

L011333

Lionville Laboratory

Printed: 11/23/2010 12:01:32PM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1011056-01	6010B ICP Metals	11/12/2010 11:40	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-01	6010B ICP Metals	11/12/2010 11:40	0.7	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-02	6010B ICP Metals	11/12/2010 11:40	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-03	6010B ICP Metals	11/12/2010 11:40	0.65	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-04	6010B ICP Metals	11/12/2010 11:40	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-05	6010B ICP Metals	11/12/2010 11:40	0.8	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1011068-06	6010B ICP Metals	11/12/2010 11:40	0.69	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
L011333-BLK1	QC	11/12/2010 11:40	0.53	50						
L011333-DUP1	QC	11/12/2010 11:40	0.72	50		1011056-01				
L011333-DUP2	QC	11/12/2010 11:40	0.59	50		1011068-02				
L011333-MS1	QC	11/12/2010 11:40	0.52	50	1001843	1011056-01	500			
L011333-MS2	QC	11/12/2010 11:40	0.67	50	1001843	1011068-02	500			
L011333-SRM1	QC	11/12/2010 11:40	0.7	50	1001320		700			

From L011202 on 11/23/2010 by ALM

Extracts Relinquished By Date

Extracts Received By Date

Lionville Laboratory

MERCURY PREPARATION

Logbook # 824

Analyst: CAS/ [illegible]
Date 11/17/10
Start Time/Temp: 1810/98
End Time/Temp: 1845/97

Instrument ID: HG32
Balance # B5 /NA
Pipette Calibration (Daily) (Y)

Prep Batch: L011249
Worksheet: HG111702
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
blank				10ml	50	
0.2 ug/l		0.100		10ml	50	
1.0 ug/l		0.500		10ml	50	
2.0 ug/l		1.000		10ml	50	
5.0 ug/l		2.500		10ml	50	
10.0 ug/l		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L011249-BLK1				0.35	50	
SRM1		(1)	(1)	0.31	50	
1011003-01				0.32	50	
L011249-DUP1				0.34	50	
MS1		0.500	1.0	0.34	50	
1011003-02				0.36	50	
03				0.33	50	
1011068-01				0.34	50	
L011249-DUP2				0.33	50	} ACM 02
MS2		0.500	1.0	0.33	50	
1011068-02				0.32	50	
03				0.33	50	
04				0.31	50	
05				0.31	50	
06				0.40	50	
1011104-01				0.32	50	
L011249-DUP3				0.32	50	
MS3		0.500	1.0	0.33	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 0901985B	11/17/10 1445
ICV/CCV/LCS	I.V. 0902297A	1

Reviewed By/Date: [illegible]

se book # 9368 for std traceability information

Soil LCS True Value = 1.26 mg/Kg
Standard # 1001320 (1)

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

Lionville Laboratory

MERCURY PREPARATION

Logbook # 824

Analyst: CDB/ [illegible]
Date 11/17/10
Start Time/Temp: See pg 096
End Time/Temp:

Instrument ID: HG32
Balance # B5 /NA
Pipette Calibration (Daily) (Y)

Prep Batch: L011249
Worksheet: HG111702
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
10N104-02				0.34	50	
03				0.36	50	
04				0.34	50	

[illegible] 11/16/10

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS		

Reviewed By/Date: [illegible] 11/18/10

Soil LCS True Value See page 096 mg/Kg
Standard # See book # 9368 for std traceability information

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

ME-HgCVAA-Prep0910

Page #:

000000020
[redacted]

Lionville Laboratory Use Only

1011068

Custody Transfer Record/Lab Work Request

Page 1 of 1

SAC SAC

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: WC Hanford SAF#RC-029

Est. Final Proj. Sampling Date:

Project#:

Project Contact/Phone#:

Lionville Laboratory Project Manager: O. Johnson

QC: SW Del: STD TAT: 15 Day

Date Rec'd: 11-10-10 Date Due: 11-25-10

Refrigerator #									A	SAC							
#/Type Container	Liquid								1								
	Solid								1								
Volume									250								
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	Hg	CN	CrVI					
		Lionville Laboratory Use Only															
									Met			CRL					

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	Metal		CRL
01	J1CN19			Soil	11-5-10	0830	X		X
02	20					0915	X		X
03	21					0935	X		X
04	J1CDR4			Soil	11-5-10	0955	X		X
05	5					1010	X		X
06	6					1015	X		X

Special Instructions:

Special Instructions:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	11/10/10	0945

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN			

00000002

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-097	Page 1 of 1

Collector: Weber	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Pull Protocol	Sampling Location: 100-K-78		SAF No.: RC-029
Ice Chest No.: ERC-96-069	Field Logbook No.: EL-1601-05	COA: C00K78A000	Method of Shipment: FEDEX
Shipped To: ~~EBERLINE SERVICES~~ / LIONVILLE BH 11/4/10	Offsite Property No.: A-100613		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Possible Radiological Contamination <DOT Limits JRB 11-9-10

Special Handling and/or Storage

Cool 4°C JRB 11-9-10

Preservation	Cool 4C	Cool 4C	None	None	None						
Type of Container	G/P	G/P	G/P	G/P	G/P						
No. of Container(s)	1	1 BH 11/4/10	1	1	1						
Volume BH 11/4/10	~~60mL~~ 250mL	~~60mL~~	500mL	~~60mL~~	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Carbon-14 Low Level; Tritium - H3 Low Level Soil						

BHudson 11/4/10

	Sample No.	Matrix *	Sample Date	Sample Time									
EB	J1CN19	SOIL	11/5/10	0830	X	X							
1	J1CN20	SOIL	11/5/10	0915	X	X							
2	J1CN21	SOIL	11/5/10	0935	X	X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Heather Weber HW/Heather C Weber	11-5-2010 1035	BHUDSON BHudson	11/5/10 1035
Relinquished By/Removed From	BHUDSON BHudson	11/5/10 1250	1060 #1C	11/5/10 1250
Relinquished By/Removed From	J.E. Benbul / 1060 1C	11-8-10 0830	Received By/Stored In J.E. Benbul	11-8-10 0830
Relinquished By/Removed From	J.E. Benbul	11-9-10 0930	Received By/Stored In FED EX	
Relinquished By/Removed From	Fed Ex	11-10-10 0945	Received By/Stored In VICTOR HERNANDEZ	11-10-10 0945
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta
(3) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

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

REVIEWED BY JR DATE 11/9/10

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

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

WCH-EE-011

0000000022

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-095	Page 1 of 1

Collector Weber	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Pull Protocol	Sampling Location 100-K-78		SAF No. RC-029
Ice Chest No. ERC-96-069	Field Logbook No. EL-1601-05	COA C00K78A000	Method of Shipment FEDEX
Shipped To BH 11/4/10 ~~EBERLINE SERVICES~~ / LIONVILLE	Offsite Property No. A100613		Bill of Lading/Air Bill No. SEE OSPC

00000023

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive cDOT Limits JEB 11-9-10

Special Handling and/or Storage

Cool 4°C JEB 11-9-10

Preservation	Cool 4C	Cool 4C	None	None	None						
Type of Container	G/P	G/P	G/P	G/P	G/P						
No. of Container(s)	1	~~1~~ BH 11/4/10 0	1	1	1						
Volume BH 11/4/10	~~60mL~~ 250mL	~~60mL~~	60mL	~~60mL~~	60g						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	Carbon-14 Low Level; Tritium - H3 Low Level Soil	RCF GEA Shipping Screen						
Sample No.	Matrix *	Sample Date	Sample Time								
3 J1CDR4	SOIL	11/5/10	0955	X	X						
4 J1CDR5	SOIL	11/5/10	1010	X	X						
5 J1CDR6	SOIL	11/5/10	1015	X	X						
~~J1CDR7~~	SOIL										
~~J1CDR8~~ BH 11/5/10	SOIL										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From Heather Weber HW/Heather Weber	11-5-10 1035	Received By/Stored In BHudson BHudson	11/5/10 1035
Relinquished By/Removed From BHudson BHudson	11/5/10 1250	Received By/Stored In 1060 #1C	11/5/10 1250
Relinquished By/Removed From J.E. Benbo / 1060 1C	0830 11-8-10	Received By/Stored In J.E. Benbo	0830 11-8-10
Relinquished By/Removed From J.E. Benbo	0930 11-9-10	Received By/Stored In FED EX	
Relinquished By/Removed From FED EX	11-10-10 0945	Received By/Stored In VICTOR HERNANDEZ	11-10-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

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

REVIEWED BY JR DATE 11/9/10

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

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

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford

Project/SAP/SOW/Release #: RC-029

Date: 11/10/10

LvL Batch #: 1011068

Sample Custodian: [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 794098429653
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 3.1	°C	Cooler # ERC-96-069
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify)
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) 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 LvL 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 _____