SAF-RC-150
300 Area Field Remediation – Other
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 4/16/12
INITIAL/DATE

COMMENTS:

SDG K3833 SAF-RC-150

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

Sample Location/Waste Site: 300–264 (327 Bldg) – RPS Sump

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
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April 3, 2012

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

Reference: **P.O. #S00W235A01**
Eberline Analytical S2-03-036-7650 SDG K3833

Dear Ms. Kessner:

Enclosed is the data report for one solid (other solid) sample designated under SAF No. RC-150. The sample was received at Eberline Analytical on March 14, 2012. The sample was analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Joseph Verville
Client Services Manager

NJV/mw

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K3833 was composed of one solid (other solid) sample designated under SAF No. RC-150 with a Project Designation of: 300 Area Field Remediation - Other.

The sample was 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 April 2, 2012.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

The relative percent difference between the original and duplicate results was 31%, the DER was 1.2. No other problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis, Low Level

The relative percent difference between the original and duplicate results was 121%, the DER was 2.2. No other problems were encountered during the course of the analyses.

2.3 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analysis

The final plating solution from the alpha Pu chemistry was split prior to electroplating; half the solution was plated for alpha counting and the other half was used to prepare the beta Pu-241 planchet. As a consequence of splitting the plating solution, the apparent tracer yields are artificially low. No other problems were encountered during the course of the analyses.

2.8 Plutonium-241 Analysis

The final plating solution from the alpha Pu chemistry was split prior to electroplating; half the solution was plated for alpha counting and the other half was used to prepare the beta Pu-241 planchet. As a consequence of splitting the plating solution, the apparent tracer yields are artificially low. No other problems were encountered during the course of the analyses.

2.9 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.10 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."

Joseph Verville
Client Services Manager

4/3/12
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 K3833

SDG	7650
Contact	Joseph Verville

Client	Hanford
Contract	No. S00W235A01
Case no	SDG_K3833

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

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

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Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	04/02/12

SDG 7650
Contact Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A01
Case no SDG_K3833

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 04/02/12

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 K3833

SDG 7650
Contact Joseph Verville

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3833

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
S203036-01	J1NLK0	300-264[327Bldg]RPS-Sump	SOLID		RC-150	RC-150-019	03/07/12 09:34
S203036-02	Lab Control Sample		SOLID		RC-150		
S203036-03	Method Blank		SOLID		RC-150		
S203036-04	Duplicate (S203036-01)	300-264[327Bldg]RPS-Sump	SOLID		RC-150		03/07/12 09:34

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

SDG 7650
Contact Joseph Verville

QC SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3833

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7650	RC-150-019	J1NLK0	SOLID	100.0	1320 g		03/14/12	7	S203036-01	7650-001
		Method Blank	SOLID						S203036-03	7650-003
		Lab Control Sample	SOLID						S203036-02	7650-002
		Duplicate (S203036-01)	SOLID	100.0	1320 g		03/14/12	7	S203036-04	7650-004

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

SDG 7650
Contact Joseph Verville

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3833

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Solids	7320-115	8.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7320-115	8.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	7320-115	8.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7320-115	10.4	1			1	1	1/1		
TC	SOLID	Technetium 99 in Solids	7320-115	13.2	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7320-115	7.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Solids	7320-115	10.0	1			1	1	1/1		
H	SOLID	Tritium in Solids	7320-115	10.0	1			1	1	1/1		
NI_L	SOLID	Nickel 63 in Solids	7320-115	11.2	1			1	1	1/1		
PU_L	SOLID	Plutonium 241 in Solids	7320-115	12.4	1			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 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

SDG 7650
Contact Joseph Verville

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3833

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S203036-01	J1NLK0			7650-001	AM		03/28/12	03/29/12	BW	Americium 241 in Solids
03/07/12	300-264[327Bldg]	RPS-Sump	SOLID	7650-001	C		03/15/12	03/20/12	BW	Carbon 14 in Solids
03/14/12	RC-150-019	RC-150		7650-001	GAM		03/19/12	03/20/12	CSS	Gamma Scan
				7650-001	H		03/15/12	03/19/12	BW	Tritium in Solids
				7650-001	NI_L		03/28/12	03/29/12	BW	Nickel 63 in Solids
				7650-001	PU		03/27/12	03/27/12	BW	Plutonium, Isotopic in Solids
				7650-001	PU_L		03/27/12	03/28/12	BW	Plutonium 241 in Solids
				7650-001	SR		03/20/12	03/26/12	BW	Total Strontium in Solids
				7650-001	TC		03/23/12	03/23/12	MWT	Technetium 99 in Solids
				7650-001	U		03/22/12	03/22/12	BW	Uranium, Isotopic in Solids
S203036-02	Lab Control Sample			7650-002	AM		03/28/12	03/29/12	BW	Americium 241 in Solids
			SOLID	7650-002	C		03/17/12	03/20/12	BW	Carbon 14 in Solids
		RC-150		7650-002	GAM		03/17/12	03/20/12	CSS	Gamma Scan
				7650-002	H		03/15/12	03/19/12	BW	Tritium in Solids
				7650-002	NI_L		03/28/12	03/29/12	BW	Nickel 63 in Solids
				7650-002	PU		03/27/12	03/27/12	BW	Plutonium, Isotopic in Solids
				7650-002	PU_L		03/27/12	03/28/12	BW	Plutonium 241 in Solids
				7650-002	SR		03/20/12	03/26/12	BW	Total Strontium in Solids
				7650-002	TC		03/23/12	03/23/12	MWT	Technetium 99 in Solids
				7650-002	U		03/22/12	03/22/12	BW	Uranium, Isotopic in Solids
S203036-03	Method Blank			7650-003	AM		03/28/12	03/29/12	BW	Americium 241 in Solids
			SOLID	7650-003	C		03/15/12	03/20/12	BW	Carbon 14 in Solids
		RC-150		7650-003	GAM		03/17/12	03/20/12	CSS	Gamma Scan
				7650-003	H		03/15/12	03/19/12	BW	Tritium in Solids
				7650-003	NI_L		03/28/12	03/29/12	BW	Nickel 63 in Solids
				7650-003	PU		03/27/12	03/27/12	BW	Plutonium, Isotopic in Solids
				7650-003	PU_L		03/27/12	03/28/12	BW	Plutonium 241 in Solids
				7650-003	SR		03/20/12	03/26/12	BW	Total Strontium in Solids
				7650-003	TC		03/23/12	03/23/12	MWT	Technetium 99 in Solids
				7650-003	U		03/22/12	03/22/12	BW	Uranium, Isotopic in Solids

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

SDG 7650
Contact Joseph Verville

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A01
Case no SDG K3833

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S203036-04	Duplicate (S203036-01)			7650-004	AM		03/28/12	03/29/12	BW	Americium 241 in Solids
03/07/12	300-264[327Bldg]	RPS-Sump	SOLID	7650-004	C		03/15/12	03/20/12	BW	Carbon 14 in Solids
03/14/12		RC-150		7650-004	GAM		03/17/12	03/20/12	CSS	Gamma Scan
				7650-004	H		03/15/12	03/19/12	BW	Tritium in Solids
				7650-004	NI_L		03/28/12	03/29/12	BW	Nickel 63 in Solids
				7650-004	PU		03/27/12	03/27/12	BW	Plutonium, Isotopic in Solids
				7650-004	PU_L		03/27/12	03/28/12	BW	Plutonium 241 in Solids
				7650-004	SR		03/20/12	03/26/12	BW	Total Strontium in Solids
				7650-004	TC		03/23/12	03/23/12	MWT	Technetium 99 in Solids
				7650-004	U		03/22/12	03/22/12	BW	Uranium, Isotopic in Solids

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	RC-150	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
C	RC-150	Carbon 14 in Solids	C14_LSC	1			1	1	1	4
GAM	RC-150	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	RC-150	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	RC-150	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4
PU	RC-150	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
PU_L	RC-150	Plutonium 241 in Solids	PU241_IE_LSC	1			1	1	1	4
SR	RC-150	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TC	RC-150	Technetium 99 in Solids	TC99_TR_SEP_GPC	1			1	1	1	4
U	RC-150	Uranium, Isotopic in Solids	UISO_PLATE_AEA	1			1	1	1	4
TOTALS				10			10	10	10	40

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

7650-003 Method Blank

METHOD BLANK

SDG	7650	Client/Case no	Hanford	SDG_K3833	
Contact	Joseph Verville	Contract	No. S00W235A01		
Lab sample id	S203036-03	Client sample id	Method Blank		
Dept sample id	7650-003	Material/Matrix		SOLID	
		SAF No	RC-150		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.05	2.0	3.50	400	U	H
Carbon 14	14762-75-5	0.349	0.46	0.754	50.0	U	C
Nickel 63	13981-37-8	-1.38	1.8	3.16	30.0	U	NI_L
Total Strontium	SR-RAD	0.006	0.15	0.288	1.00	U	SR
Americium 241	14596-10-2	-0.035	0.069	0.331	1.00	U	AM
Technetium 99	14133-76-7	0.002	0.21	0.360	15.0	U	TC
Uranium 233/234	U-233/234	0.027	0.055	0.208	1.00	U	U
Uranium 235	15117-96-1	0	0.066	0.252	1.00	U	U
Uranium 238	U-238	0.027	0.055	0.208	1.00	U	U
Plutonium 238	13981-16-3	0	0.12	0.476	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.12	0.476	1.00	U	PU
Plutonium 241	14119-32-5	-0.813	8.2	13.8	15.0	U	PU_L
Potassium 40	13966-00-2	U		0.110		U	GAM
Cobalt 60	10198-40-0	U		0.008	0.050	U	GAM
Niobium 94	14681-63-1	U		0.010		U	GAM
Cesium 134	13967-70-9	U		0.010		U	GAM
Cesium 137	10045-97-3	U		0.008	0.100	U	GAM
Cerium 144	14762-78-8	U		0.031		U	GAM
Europium 152	14683-23-9	U		0.021	0.100	U	GAM
Europium 154	15585-10-1	U		0.023	0.100	U	GAM
Europium 155	14391-16-3	U		0.017	0.100	U	GAM
Radium 226	13982-63-3	U		0.020	0.100	U	GAM
Radium 228	15262-20-1	U		0.037	0.200	U	GAM
Thorium 228	14274-82-9	U		0.011		U	GAM
Thorium 232	TH-232	U		0.037		U	GAM
Uranium 235	15117-96-1	U		0.037	0.300	U	GAM
Uranium 238	U-238	U		1.01	10.0	U	GAM
Americium 241	14596-10-2	U		0.022	0.300	U	GAM
Zinc 65	13982-39-3	U		0.017		U	GAM

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

7650-003 Method Blank

BLANK, cont.

SDG	7650	Client/Case no	Hanford	SDG_K3833	
Contact	Joseph Verville	Contract	No. S00W235A01		
Lab sample id	S203036-03	Client sample id	Method Blank		
Dept sample id	7650-003	Material/Matrix		SOLID	
		SAF No	RC-150		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Ruthenium 106	13967-48-1	U		0.067		U	GAM
Antimony 125	14234-35-6	U		0.019		U	GAM
Bismuth 214	14733-03-0	U		0.020		U	GAM
Lead 212	15092-94-1	U		0.012		U	GAM

QC-BLANK #81330

Lab id	EBRLNE
Protocol	Hanford1
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Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

7650-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7650

Contact Joseph Verville

Client/Case no Hanford SDG K3833

Contract No. S00W235A01

Lab sample id S203036-02

Dept sample id 7650-002

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-150

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	322	8.6	4.05	400		H	323	13	100	83-117	80-120
Carbon 14	1090	3.4	0.748	50.0		C	1040	42	105	83-117	80-120
Nickel 63	194	5.7	3.13	30.0		NI_L	216	8.6	90	83-117	80-120
Total Strontium	9.26	0.54	0.244	1.00		SR	8.51	0.34	109	80-120	80-120
Americium 241	10.2	1.3	0.268	1.00		AM	12.1	0.48	84	80-120	80-120
Technetium 99	135	4.6	1.06	15.0		TC	120	4.8	112	76-124	80-120
Uranium 233/234	11.1	1.4	0.242	1.00		U	10.7	0.43	104	76-124	80-120
Uranium 238	11.6	1.4	0.242	1.00		U	10.7	0.43	108	76-124	80-120
Plutonium 238	12.6	1.9	0.388	1.00		PU	13.6	0.54	93	76-124	80-120
Plutonium 239/240	14.9	2.0	0.388	1.00		PU	15.8	0.63	94	77-123	80-120
Plutonium 241	309	13	13.0	15.0		PU_L	302	12	102	79-121	80-120
Cobalt 60	0.324	0.024	0.013	0.050		GAM	0.360	0.014	90	85-115	80-120
Cesium 137	0.359	0.022	0.014	0.100		GAM	0.402	0.016	89	86-114	80-120

QC-LCS #81329

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

7650-004 J1NLK0

DUPLICATE

SDG	7650			Client/Case no	Hanford SDG K3833
Contact	Joseph Verville			Contract	No. S00W235A01
	DUPLICATE		ORIGINAL		
Lab sample id	S203036-04	Lab sample id	S203036-01	Client sample id	J1NLK0
Dept sample id	7650-004	Dept sample id	7650-001	Location/Matrix	300-264[327Bldg]RPS-Sump SOLID
		Received	03/14/12	Collected/Weight	03/07/12 09:34 1320 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-150-019 RC-150

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	9.48	3.0	4.35	400		H	6.91	2.9	4.42		31	79	1.2
Carbon 14	0.236	0.46	0.765	50.0	U	C	0.956	0.47	0.756		121	167	2.2
Nickel 63	-1.05	1.8	3.08	30.0	U	NI_L	-0.880	1.9	3.30	U	-		0.1
Total Strontium	22.6	0.93	0.310	1.00		SR	23.3	0.96	0.319		3	24	0.4
Americium 241	28.5	3.1	0.372	1.00		AM	29.1	3.3	0.396		2	29	0.2
Technetium 99	-0.082	0.19	0.333	15.0	U	TC	-0.099	0.19	0.326	U	-		0.1
Uranium 233/234	0.538	0.29	0.274	1.00		U	0.463	0.27	0.253		15	120	0.4
Uranium 235	0.043	0.087	0.332	1.00	U	U	0	0.080	0.306	U	-		0.7
Uranium 238	0.502	0.29	0.274	1.00		U	0.397	0.20	0.253		23	119	0.6
Plutonium 238	6.95	1.7	0.591	1.00		PU	5.43	1.3	0.500		25	55	1.3
Plutonium 239/240	29.6	4.1	0.590	1.00		PU	29.3	3.7	0.500		1	33	0.1
Plutonium 241	137	11	13.3	15.0		PU_L	148	11	13.8		8	31	0.7
Potassium 40	7.77	0.33	0.148			GAM	7.31	0.49	0.099		6	19	1.0
Cobalt 60	0.131	0.019	0.018	0.050		GAM	0.134	0.012	0.012		2	29	0.2
Niobium 94	U		0.027		U	GAM	U		0.015	U	-		0.8
Cesium 134	U		0.036		U	GAM	U		0.016	U	-		1.0
Cesium 137	224	0.40	0.095	0.100		GAM	222	0.20	0.027		1	15	0.2
Cerium 144	U		0.639		U	GAM	U		0.259	U	-		1.1
Europium 152	1.14	0.26	0.380	0.100		GAM	1.07	0.14	0.199		6	43	0.4
Europium 154	0.780	0.076	0.068	0.100		GAM	0.755	0.042	0.039		3	23	0.4
Europium 155	U		0.336	0.100	U	GAM	U		0.206	U	-		0.7
Radium 226	0.291	0.11	0.152	0.100		GAM	0.281	0.057	0.076		3	67	0.2
Radium 228	0.356	0.068	0.081	0.200		GAM	0.414	0.052	0.054		15	37	1.2
Thorium 228	0.349	0.13	0.190			GAM	0.184	0.059	0.089		62	82	2.3
Thorium 232	0.356	0.068	0.081			GAM	0.414	0.052	0.054		15	37	1.2
Uranium 235	U			0.300		GAM	U		0.286	U	0	212	0
Uranium 238	U			10.0		GAM	U		1.53	U	0	212	0
Americium 241	U			0.300		GAM	14.1	0.060	0.058		198	2	300

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

7650-004 J1NLK0

DUPLICATE, cont.

SDG	7650			Client/Case no	Hanford SDG K3833
Contact	Joseph Verville			Contract	No. S00W235A01
	DUPLICATE		ORIGINAL		
Lab sample id	S203036-04	Lab sample id	S203036-01	Client sample id	J1NLK0
Dept sample id	7650-004	Dept sample id	7650-001	Location/Matrix	300-264[327Bldg]RPS-Sump SOLID
		Received	03/14/12	Collected/Weight	03/07/12 09:34 1320 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-150-019 RC-150

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
Zinc 65	U		0.050		U	GAM	U		0.034	U	-		0.5
Ruthenium 106	U		0.702		U	GAM	U		0.327	U	-		1.0
Antimony 125	U		0.391		U	GAM	U		0.209	U	-		0.8
Bismuth 214	0.300	0.11	0.157			GAM	0.290	0.059	0.078		3	65	0.2
Lead 212	0.359	0.13	0.196			GAM	0.189	0.061	0.091		62	80	2.3

QC-DUP#1 81331

300 Area Field Remediation - Other

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

7650-001 J1NLK0

DATA SHEET

SDG	7650	Client/Case no	Hanford SDG_K3833
Contact	Joseph Verville	Contract	No. S00W235A01
Lab sample id	S203036-01	Client sample id	J1NLK0
Dept sample id	7650-001	Location/Matrix	300-264[327Bldg]RPS-Sump SOLID
Received	03/14/12	Collected/Weight	03/07/12 09:34 1320 g
% solids	100.0	Custody/SAF No	RC-150-019 RC-150

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	6.91	2.9	4.42	400		H
Carbon 14	14762-75-5	0.956	0.47	0.756	50.0		C
Nickel 63	13981-37-8	-0.880	1.9	3.30	30.0	U	NI_L
Total Strontium	SR-RAD	23.3	0.96	0.319	1.00		SR
Americium 241	14596-10-2	29.1	3.3	0.396	1.00		AM
Technetium 99	14133-76-7	-0.099	0.19	0.326	15.0	U	TC
Uranium 233/234	U-233/234	0.463	0.27	0.253	1.00		U
Uranium 235	15117-96-1	0	0.080	0.306	1.00	U	U
Uranium 238	U-238	0.397	0.20	0.253	1.00		U
Plutonium 238	13981-16-3	5.43	1.3	0.500	1.00		PU
Plutonium 239/240	PU-239/240	29.3	3.7	0.500	1.00		PU
Plutonium 241	14119-32-5	148	11	13.8	15.0		PU_L
Potassium 40	13966-00-2	7.31	0.49	0.099			GAM
Cobalt 60	10198-40-0	0.134	0.012	0.012	0.050		GAM
Niobium 94	14681-63-1	U		0.015		U	GAM
Cesium 134	13967-70-9	U		0.016		U	GAM
Cesium 137	10045-97-3	222	0.20	0.027	0.100		GAM
Cerium 144	14762-78-8	U		0.259		U	GAM
Europium 152	14683-23-9	1.07	0.14	0.199	0.100		GAM
Europium 154	15585-10-1	0.755	0.042	0.039	0.100		GAM
Europium 155	14391-16-3	U		0.206	0.100	U	GAM
Radium 226	13982-63-3	0.281	0.057	0.076	0.100		GAM
Radium 228	15262-20-1	0.414	0.052	0.054	0.200		GAM
Thorium 228	14274-82-9	0.184	0.059	0.089			GAM
Thorium 232	TH-232	0.414	0.052	0.054			GAM
Uranium 235	15117-96-1	U		0.286	0.300	U	GAM
Uranium 238	U-238	U		1.53	10.0	U	GAM
Americium 241	14596-10-2	14.1	0.060	0.058	0.300		GAM

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/02/12

DATA SHEET, cont

SDG	7650	Client/Case no	Hanford SDG_K3833
Contact	Joseph Verville	Contract	No. S00W235A01
Lab sample id	S203036-01	Client sample id	J1NLK0
Dept sample id	7650-001	Location/Matrix	300-264[327Bldg]RPS-Sump SOLID
Received	03/14/12	Collected/Weight	03/07/12 09:34 1320 g
% solids	100.0	Custody/SAF No	RC-150-019 RC-150

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Zinc 65	13982-39-3	U		0.034		U	GAM
Ruthenium 106	13967-48-1	U		0.327		U	GAM
Antimony 125	14234-35-6	U		0.209		U	GAM
Bismuth 214	14733-03-0	0.290	0.059	0.078			GAM
Lead 212	15092-94-1	0.189	0.061	0.091			GAM

300 Area Field Remediation - Other

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test	AM
Matrix	SOLID
SDG	7650
Contact	Joseph Verville

LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. S00W235A01
Contract	SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241
Preparation batch 7320-115					
S203036-01			7650-001	J1NLK0	29.1
S203036-02			7650-002	Lab Control Sample	ok
S203036-03			7650-003	Method Blank	U
S203036-04			7650-004	Duplicate (S203036-01)	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 7320-115			2σ prep error 8.0 %	Reference Lab Notebook No. 7301 pg. 61												
S203036-01			J1NLK0	0.396	0.500			55		100			21	03/28/12	03/28	SS-043
S203036-02			Lab Control Sample	0.268	0.500			78		100				03/28/12	03/28	SS-045
S203036-03			Method Blank	0.331	0.500			70		100				03/28/12	03/28	SS-046
S203036-04			Duplicate (S203036-01)	0.372	0.500			63		101			21	03/28/12	03/28	SS-049
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	SPP-060	Soil Preparation, rev 0
	CP-965	Americium & Curium in Water & Dissolved Samples by Extraction Chromatography & Microprecipitation, rev 3
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.342	±	0.112
YIELD	66	±	20

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test	PU
Matrix	SOLID
SDG	7650
Contact	Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. S00W235A01
Contract	SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7320-115						
S203036-01			7650-001	J1NLK0	5.43	29.3
S203036-02			7650-002	Lab Control Sample	ok	ok
S203036-03			7650-003	Method Blank	U	U
S203036-04			7650-004	Duplicate (S203036-01)	ok	ok
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 7320-115			2σ prep error 8.0 %	Reference Lab Notebook No. 7301 pg. 61												
S203036-01			J1NLK0	0.500	0.500			34		103			20	03/27/12	03/27	SS-043
S203036-02			Lab Control Sample	0.388	0.500			42		103				03/27/12	03/27	SS-045
S203036-03			Method Blank	0.476	0.500			38		103				03/27/12	03/27	SS-046
S203036-04			Duplicate (S203036-01)	0.591	0.500			35		103			20	03/27/12	03/27	SS-037
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD	MDA	0.489	± 0.167
FOR 4 SAMPLES	YIELD	37	± 7

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test U Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

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 7320-115											
S203036-01			7650-001	J1NLK0	0.463	U	0.397	117	90	0	20
S203036-02			7650-002	Lab Control Sample	ok		ok				
S203036-03			7650-003	Method Blank	U	U	U				
S203036-04			7650-004	Duplicate (S203036-01)	ok	- U	ok	107	85	9	18
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
							Averages	112		4	

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 7320-115 2σ prep error 8.0 % Reference Lab Notebook No. 7301 pg. 61																
S203036-01			J1NLK0	0.306	0.500			83		102			15	03/22/12	03/22	SS-033
S203036-02			Lab Control Sample	0.242	0.500			95		100				03/22/12	03/22	SS-063
S203036-03			Method Blank	0.252	0.500			84		100				03/22/12	03/22	SS-064
S203036-04			Duplicate (S203036-01)	0.332	0.500			78		103			15	03/22/12	03/22	SS-034
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.283 ± 0.086
YIELD 85 ± 14

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test SR	Matrix SOLID
SDG 7650	
Contact Joseph Verville	

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford	
Contract No. S00W235A01	
Contract SDG K3833	

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7320-115					
S203036-01			7650-001	J1NLK0	23.3
S203036-02			7650-002	Lab Control Sample	ok
S203036-03			7650-003	Method Blank	U
S203036-04			7650-004	Duplicate (S203036-01)	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 7320-115			2σ prep error 10.4 % Reference Lab Notebook No. 7301 pg. 61													
S203036-01			J1NLK0	0.319	1.00			91		100			13	03/20/12	03/20	GRB-221
S203036-02			Lab Control Sample	0.244	1.00			87		100				03/20/12	03/20	GRB-223
S203036-03			Method Blank	0.288	1.00			91		100				03/20/12	03/20	GRB-224
S203036-04			Duplicate (S203036-01)	0.310	1.00			91		100			13	03/20/12	03/20	GRB-221
Nominal values and limits from method				1.00	1.00			40-110		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-060	Soil Preparation, rev 0
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 4

AVERAGES ± 2 SD	MDA	0.290	± 0.067
FOR 4 SAMPLES	YIELD	90	± 4

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test TC Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99	
Preparation batch 7320-115						
S203036-01			7650-001	J1NLK0	U	
S203036-02			7650-002	Lab Control Sample	ok	
S203036-03			7650-003	Method Blank	U	
S203036-04			7650-004	Duplicate (S203036-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	15.0	

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 7320-115			2σ prep error 13.2 % Reference Lab Notebook No. 7301 pg. 61													
S203036-01			J1NLK0	0.326	1.00			82		200			16	03/20/12	03/23	GRB-229
S203036-02			Lab Control Sample	1.06	1.00			81		24				03/20/12	03/23	GRB-225
S203036-03			Method Blank	0.360	1.00			70		200				03/20/12	03/23	GRB-230
S203036-04			Duplicate (S203036-01)	0.333	1.00			82		200			16	03/20/12	03/23	GRB-231
Nominal values and limits from method				15.0	1.00			30-110		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_GPC
	SPP-062	Sample Aliquoting, rev 1
	CP-021	Preparation of Tc-99m Tracer, rev 6
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 8
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.520 ± 0.721
YIELD 79 ± 12

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test GAM Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 7320-115						
S203036-01			7650-001	J1NLK0	0.134	222
S203036-02			7650-002	Lab Control Sample	ok	ok
S203036-03			7650-003	Method Blank	U	U
S203036-04			7650-004	Duplicate (S203036-01)	ok	ok
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 7320-115			2σ prep error 7.0 %	Reference Lab Notebook No. 7301 pg. 61												
S203036-01			J1NLK0	1.05	610					874			12	03/15/12	03/19	MB,06,00
S203036-02			Lab Control Sample	0.013	609					219				03/15/12	03/17	01,03,00
S203036-03			Method Blank	0.067	609					219				03/15/12	03/17	01,04,00
S203036-04			Duplicate (S203036-01)	0.702	610					202			10	03/15/12	03/17	02,02,00
Nominal values and limits from method				0.050	683					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.458 ± 1.01
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test C Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 7320-115						
S203036-01			7650-001	J1NLK0	0.956	
S203036-02			7650-002	Lab Control Sample	ok	
S203036-03			7650-003	Method Blank	U	
S203036-04			7650-004	Duplicate (S203036-01)	ok	U
Nominal values and limits from method				RDLs (pCi/g)	50.0	

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 7320-115			2σ prep error 10.0 % Reference Lab Notebook No. 7301 pg. 61													
S203036-01			J1NLK0	0.756	0.618			100		400			8	03/15/12	03/15	LSC-004
S203036-02			Lab Control Sample	0.748	0.616			100		400				03/15/12	03/17	LSC-004
S203036-03			Method Blank	0.754	0.616			100		400				03/15/12	03/15	LSC-004
S203036-04			Duplicate (S203036-01)	0.765	0.617			100		400			8	03/15/12	03/15	LSC-004
Nominal values and limits from method				50.0	0.608					50			180			

PROCEDURES REFERENCE C14_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 0.756 ± 0.014
FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test H Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium
Preparation batch 7320-115					
S203036-01			7650-001	J1NLK0	6.91
S203036-02			7650-002	Lab Control Sample	ok
S203036-03			7650-003	Method Blank	U
S203036-04			7650-004	Duplicate (S203036-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	400

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 7320-115			2σ prep error 10.0 % Reference Lab Notebook No. 7301 pg. 61													
S203036-01			J1NLK0	4.42	0.618			100		50			8	03/15/12	03/15	LSC-006
S203036-02			Lab Control Sample	4.05	0.616			100		50				03/15/12	03/15	LSC-006
S203036-03			Method Blank	3.50	0.616			100		50				03/15/12	03/15	LSC-006
S203036-04			Duplicate (S203036-01)	4.35	0.617			100		50			8	03/15/12	03/15	LSC-006
Nominal values and limits from method				400	0.608					50			180			

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

AVERAGES ± 2 SD MDA 4.08 ± 0.837
FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test NI L Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7320-115						
S203036-01			7650-001	J1NLK0	U	
S203036-02			7650-002	Lab Control Sample	ok	
S203036-03			7650-003	Method Blank	U	
S203036-04			7650-004	Duplicate (S203036-01)	-	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 7320-115			2σ prep error 11.2 % Reference Lab Notebook No. 7301 pg. 61													
S203036-01			J1NLK0	3.30	0.500			94		50			21	03/28/12	03/28	LSC-006
S203036-02			Lab Control Sample	3.13	0.500			100		50				03/28/12	03/28	LSC-006
S203036-03			Method Blank	3.16	0.500			100		50				03/28/12	03/28	LSC-006
S203036-04			Duplicate (S203036-01)	3.08	0.500			100		50			21	03/28/12	03/28	LSC-006
Nominal values and limits from method				30.0	0.500			40-110		25			180			

PROCEDURES	REFERENCE	
	NI63_LSC	
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-281	Nickel-63 Purification By Extraction Chromatography, rev 5

AVERAGES ± 2 SD FOR 4 SAMPLES			
MDA	3.17	±	0.189
YIELD	98	±	6

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/02/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3833

Test PU L Matrix SOLID
SDG 7650
Contact Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM 241 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3833

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 241
Preparation batch 7320-115					
S203036-01			7650-001	J1NLK0	148
S203036-02			7650-002	Lab Control Sample	ok
S203036-03			7650-003	Method Blank	U
S203036-04			7650-004	Duplicate (S203036-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	15.0

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 7320-115			2σ prep error 12.4 % Reference Lab Notebook No. 7301 pg. 61													
S203036-01			J1NLK0	13.8	0.500			37		100			20	03/27/12	03/27	LSC-004
S203036-02			Lab Control Sample	13.0	0.500			40		100				03/27/12	03/27	LSC-004
S203036-03			Method Blank	13.8	0.500			37		100				03/27/12	03/27	LSC-004
S203036-04			Duplicate (S203036-01)	13.3	0.500			39		100			20	03/27/12	03/27	LSC-004
Nominal values and limits from method				15.0	0.500			30-110		50			180			

PROCEDURES	REFERENCE	PU241_IE_LSC
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	RP-948	Plutonium-241 by Liquid Scintillation Counting, rev 4

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 13.5 ± 0.790
YIELD 38 ± 3

Lab id EBRLNE
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Version 3.06
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SDG 7650
Contact Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A01
Case no SDG_K3833

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/02/12

SDG 7650
Contact Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A01
Case no SDG_K3833

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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SDG 7650
Contact Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A01
Case no SDG_K3833

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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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.

SDG 7650
Contact Joseph Verville

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.

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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
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REPORT GUIDE

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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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SDG 7650
Contact Joseph Verville

REPORT GUIDE

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Contract No. S00W235A01
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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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

SDG 7650
Contact Joseph Verville

REPORT GUIDE

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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Contact Joseph Verville

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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SDG 7650
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REPORT GUIDE

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

* 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-150-019	Page 1 of 2

Collector J. Russell	**Company Contact** Joan Kessner **Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9L **Data Turnaround** 21 Days
Project Designation 300 Area Field Remediation - Other	**Sampling Location** 300 - 264 [327 Bldg] - RPS Sump K3833 (7650)	**SAF No.** RC-150	
Ice Chest No. WCH-11-059 ~~N/A~~ 3-7-12 cmB	**Field Logbook No.** EL-1663-01 **COA** R302642600	**Method of Shipment** Fed Ex/Hand Deliver	
Shipped To ~~WCH-11-059~~ 3-12-12 EBERLINE SERVICES/ ~~LIONVILLE~~ 3/12	**Offsite Property No.** ~~N/A~~ 3-7-12 cmB ~~A110181~~ 3-12-12 cmB NA	**Bill of Lading/Air Bill No.** ~~N/A~~ 3-7-12 cmB See RSR	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~Potential~~ Radioactive / Dot limited quantity
3-12-12 cmB

Special Handling and/or Storage
~~Cool 4C~~ NONE
AJ 3-12-12

Preservation	Cool 4C	None	Cool 4C	None	None	None	None	None	None	None
Type of Container	G/P	aG	aG	G/P	G/P	G/P	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	120mL	60mL	500mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	See item (3) in Special Instructions.	Isotopic Uranium	Isotopic Plutonium	Americium-241	Strontium-89,90 -- Total Sr	Technetium-99	Plutonium-241

Sample No.	Matrix *	Sample Date	Sample Time										
J1NLK0	OTHER	3/7/2012	0934				✓	✓	✓	✓	✓	✓	✓

RCF 322

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	3/7/12 1555	DAVID BECKER [signature]	3/7/12 1555
DAVID BECKER [signature]	3/7/12 1700	[signature] Bingham	0604/2 3-7-12 1700
[signature] WCH	0604/2 3-12-12 0825	Fed Ex	
FED EX		[signature]	03/14/12 0930

SPECIAL INSTRUCTIONS
~~Please Note: For the samples designated for TCLP Metals Analysis - Leach and Hold until further direction is provided.~~ 3/7/12
(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV) {Mercury}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}
(3) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Niobium-94, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

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

REVIEWED BY AJ DATE 3-12-12

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-150-019	Page 2 of 2

Collector J. Russell	**Company Contact** Joan Kessner **Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9L **Data Turnaround** 21 Days
Project Designation 300 Area Field Remediation - Other	**Sampling Location** 300 - 264 [327 Bldg] - RPS Sump K3833 (7630)	**SAF No.** RC-150	
Ice Chest No. ~~N/A~~ 3-7-12 cmB WCH-11-059	**Field Logbook No.** EL-1663-01 / **COA** R302642600	**Method of Shipment** Fed Ex/Hand Deliver	
Shipped To EBERLINE SERVICES LIONVILLE 3/7/12	**Offsite Property No.** ~~N/A~~ 3-7-12 cmB NA	**Bill of Lading/Air Bill No.** ~~N/A~~ 3-7-12 cmB See RSR	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potential Radioactive Not limited quantity 3-12-12 cmB

Special Handling and/or Storage
~~Cool 4C~~ NONE
AJ 3-12-12

Preservation	None	None	None	None								
Type of Container	G/P	G/P	G/P	G/P								
No. of Container(s)	1	1	1									
Volume	60mL	60mL	60mL	60mL								
SAMPLE ANALYSIS	Carbon-14 Low Level	Nickel-63	Tritium - H3	RCF GEA Shipping Screen								
Sample No. / Matrix * / Sample Date / Sample Time												
J1NLK0 / OTHER / 3/7/2012 / 0934	✓	✓	✓									

RCF 3 222

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	3/7/12 1555	DAVID BECKER [signature]	3/7/12 1555
DAVID BECKER [signature]	3/7/12 1700	[signature]	1060HJ 3-7-12 1700
[signature]	1060HJ 3-12-12 WCH 0825	Fed Ex	
FED EX		MF MATAWANA	03/14/12 0930

SPECIAL INSTRUCTIONS
~~Please Note: For the samples designated for TCLP Metals Analysis - Leach and Hold until further direction is provided.~~ 3/7/12

REVIEWED BY AJ
DATE 3-12-12

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 03/14/12 0972 CoC No. RC-150-019

Container I.D. No. WCH-11-059 Requested TAT (Days) 21 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: 1 Sample Matrix X SOLID
7. Number of containers per sample: 10 (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: 03/14/12 Time: 1100

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
JINLKO	250						

Ion Chamber Ser. No. ____ Calibration date ____

Alpha Meter Ser. No. ____ Calibration date ____

Beta/Gamma Meter Ser. No. 100485 Calibration date 06 DEC 11

Form SCP-02, 07-30-07

"over 55 years of quality nuclear services"

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

13 April 2012

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
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 #	1203045
SDG #	K3833
SAF #	RC-150
Date Received	03/13/12
# Samples	1
Matrix	OTHER SOLID
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	

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

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

R:\GROUP\PM\ORLETTE\Hanford\Data\B_ltrs.DOC

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

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1NLK0	1203045-01	Other Solid	03/07/2012 09:34	03/13/2012 09:55

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-150 K3833
LVL #: 1203045

W.O. #: 60049-001-001-0001-00
Date Received: 03-13-2012

SEMIVOLATILE

One (1) other solid sample was collected on 03-07-2012.

The sample and associated QC samples were extracted 03-14-2012 and analyzed 03-21,27-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for client specified target compounds.

Lionville Laboratory (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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

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

2. The sample was extracted and analyzed within holding time.

3. Due to the sample matrix, the sample had an elevated final volume of 2 mls and was extracted with a reduced initial volume. Reporting limits have been adjusted to reflect this change.

4. Non-target compounds were detected in this sample

5. The samples J1NLK0 and L203119-MS2/MSD2 required a 3-fold dilution due to the matrix. Reporting limits have been adjusted to reflect the necessary dilutions.

6. All obtainable surrogate recoveries were within acceptance criteria.

7. The method blank was below the reporting limit for all target compounds.

8. Four (4) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS077) has been enclosed.

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 22 pages.

9. Six (6) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS077) has been enclosed. Several matrix spike recoveries were unobtainable due to dilution required for analysis and elevated final volumes.

10. The sample was reported on a wet weight 'as received' basis.

11. All initial calibrations associated with this data set were within acceptance criteria.

12. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

13. Internal standard area and retention time criteria were not met for sample L203119-MSD2. An associated matrix spike analyses fulfilled its reanalysis requirement.

14. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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 hardcopy package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

4/2/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS077

Initiator: Shannon Saylor
Date: 4.2.12
Client: WCHanford/RC-150K3533

Batch: 1203045
Samples: L203119-BS1, MS2, MSD2
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Other-SOLID
Prep Batch: L203119

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

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

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

Several Spike recoveries outside QC acceptance Limits in L203119-BS1, MS2, MSD2 RCC 4/2/12

2. Known or Probable Causes(s) MS/MSD - possible matrix effect, samples had an elevated final volume and dilution required for analysis. BS - Acenaphthylene, dibenz(a,h)anthracene marginally below QC acceptance criteria; acid phenols subject to erratic chromatographic behavior. All targets in samples below the reporting limits. Minimal impact on the data narrate RCC 4/4/12

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: 4/2/12

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

5. Final Action...signature/date: 4/2/12 Other Explanation:

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

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

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

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

QA-139-A-0208

GLOSSARY

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concetration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3833 Project Manager: Joan Kessner	**Reported:** 04/02/2012 11:12

J1NLK0
1203045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
1,2-Dichlorobenzene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
1,3-Dichlorobenzene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
1,4-Dichlorobenzene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,4,5-Trichlorophenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,4,6-Trichlorophenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,4-Dichlorophenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,4-Dimethylphenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,4-Dinitrophenol	21400	U	21400	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,4-Dinitrotoluene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2,6-Dinitrotoluene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2-Chloronaphthalene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2-Chlorophenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2-Methylnaphthalene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2-Methylphenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2-Nitroaniline	21400	U	21400	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
2-Nitrophenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
3,3'-Dichlorobenzidine	8570	U	8570	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
3-Nitroaniline	21400	U	21400	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4,6-Dinitro-2-methylphenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4-Bromophenyl Phenyl Ether	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4-Chloro-3-methylphenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4-Chloroaniline	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4-Chlorophenyl Phenyl Ether	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
3- and/or 4-Methylphenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4-Nitroaniline	21400	U	21400	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
4-Nitrophenol	21400	U	21400	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Acenaphthene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Acenaphthylene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Anthracene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Benz[a]anthracene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Benzo[a] pyrene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Benzo[b] fluoranthene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Benzo[g,h,i] perylene	**1150**	J, D	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Benzo[k] fluoranthene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Bis(2-chloroethoxy) methane	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3833 Project Manager: Joan Kessner	**Reported:** 04/02/2012 11:12

J1NLK0
1203045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Bis(2-chloroisopropyl) ether	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Bis(2-ethylhexyl) phthalate	**2270**	J, D	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Butyl Benzyl Phthalate	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Carbazole	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Chrysene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Dibenz[a,h]anthracene	**736**	J, D	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Dibenzofuran	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Diethyl Phthalate	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Dimethyl Phthalate	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Di-n-butyl Phthalate	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Di-n-octyl Phthalate	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Fluoranthene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Fluorene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Hexachlorobenzene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Hexachlorobutadiene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Hexachlorocyclopentadiene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Hexachloroethane	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Indeno[1,2,3-cd]pyrene	**952**	J, D	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Isophorone	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Naphthalene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Nitrobenzene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
N-Nitrosodi-n-propylamine	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
N-Nitrosodiphenylamine	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Pentachlorophenol	21400	U	21400	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Phenanthrene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Phenol	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Pyrene	4290	U	4290	ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
TIC:Aldol Condensate 1	**713000**	A, B, J, D		ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
TIC:Unknown 1	**53700**	J, D		ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
TIC:Unknown 2	**5630**	J, D		ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
TIC:Unknown 3	**4620**	J, D		ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
TIC:Unknown 4	**4640**	J, D		ug/kg wet	3	L203119	03/14/2012	03/27/2012	8270C
Surrogate: 2-Fluorophenol	*64 %*		*25-121*			*L203119*	*03/14/2012*	*03/27/2012*	*8270C*
Surrogate: Phenol-d5	*72 %*		*24-113*			*L203119*	*03/14/2012*	*03/27/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*68 %*		*23-120*			*L203119*	*03/14/2012*	*03/27/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

J1NLK0
1203045-01 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*76 %*	*30-115*			*L203119*	*03/14/2012*	*03/27/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*35 %*	*19-122*			*L203119*	*03/14/2012*	*03/27/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*82 %*	*18-137*			*L203119*	*03/14/2012*	*03/27/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
Blank (L203119-BLK1)				Prepared: 03/14/2012 Analyzed: 03/21/2012						
1,2,4-Trichlorobenzene	330	U	330	ug/kg wet						
1,2-Dichlorobenzene	330	U	330	ug/kg wet						
1,3-Dichlorobenzene	330	U	330	ug/kg wet						
1,4-Dichlorobenzene	330	U	330	ug/kg wet						
2,4,5-Trichlorophenol	330	U	330	ug/kg wet						
2,4,6-Trichlorophenol	330	U	330	ug/kg wet						
2,4-Dichlorophenol	330	U	330	ug/kg wet						
2,4-Dimethylphenol	330	U	330	ug/kg wet						
2,4-Dinitrophenol	1650	U	1650	ug/kg wet						
2,4-Dinitrotoluene	330	U	330	ug/kg wet						
2,6-Dinitrotoluene	330	U	330	ug/kg wet						
2-Chloronaphthalene	330	U	330	ug/kg wet						
2-Chlorophenol	330	U	330	ug/kg wet						
2-Methylnaphthalene	330	U	330	ug/kg wet						
2-Methylphenol	330	U	330	ug/kg wet						
2-Nitroaniline	1650	U	1650	ug/kg wet						
2-Nitrophenol	330	U	330	ug/kg wet						
3,3'-Dichlorobenzidine	660	U	660	ug/kg wet						
3-Nitroaniline	1650	U	1650	ug/kg wet						
4,6-Dinitro-2-methylphenol	330	U	330	ug/kg wet						
4-Bromophenyl Phenyl Ether	330	U	330	ug/kg wet						
4-Chloro-3-methylphenol	330	U	330	ug/kg wet						
4-Chloroaniline	330	U	330	ug/kg wet						
4-Chlorophenyl Phenyl Ether	330	U	330	ug/kg wet						
3- and/or 4-Methylphenol	330	U	330	ug/kg wet						
4-Nitroaniline	1650	U	1650	ug/kg wet						
4-Nitrophenol	1650	U	1650	ug/kg wet						
Acenaphthene	330	U	330	ug/kg wet						
Acenaphthylene	330	U	330	ug/kg wet						
Anthracene	330	U	330	ug/kg wet						
Benz[a]anthracene	330	U	330	ug/kg wet						
Benzo[a] pyrene	330	U	330	ug/kg wet						
Benzo[b] fluoranthene	330	U	330	ug/kg wet						
Benzo[g,h,i] perylene	330	U	330	ug/kg wet						
Benzo[k] fluoranthene	330	U	330	ug/kg wet						
Bis(2-chloroethoxy) methane	330	U	330	ug/kg wet						

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3833 Project Manager: Joan Kessner	**Reported:** 04/02/2012 11:22

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
Blank (L203119-BLK1)				Prepared: 03/14/2012 Analyzed: 03/21/2012						
Bis(2-chloroethyl) ether	330	U	330	ug/kg wet						
Bis(2-chloroisopropyl) ether	330	U	330	ug/kg wet						
Bis(2-ethylhexyl) phthalate	330	U	330	ug/kg wet						
Butyl Benzyl Phthalate	330	U	330	ug/kg wet						
Carbazole	330	U	330	ug/kg wet						
Chrysene	330	U	330	ug/kg wet						
Dibenz[a,h]anthracene	330	U	330	ug/kg wet						
Dibenzofuran	330	U	330	ug/kg wet						
Diethyl Phthalate	330	U	330	ug/kg wet						
Dimethyl Phthalate	330	U	330	ug/kg wet						
Di-n-butyl Phthalate	330	U	330	ug/kg wet						
Di-n-octyl Phthalate	330	U	330	ug/kg wet						
Fluoranthene	330	U	330	ug/kg wet						
Fluorene	330	U	330	ug/kg wet						
Hexachlorobenzene	330	U	330	ug/kg wet						
Hexachlorobutadiene	330	U	330	ug/kg wet						
Hexachlorocyclopentadiene	330	U	330	ug/kg wet						
Hexachloroethane	330	U	330	ug/kg wet						
Indeno[1,2,3-cd]pyrene	330	U	330	ug/kg wet						
Isophorone	330	U	330	ug/kg wet						
Naphthalene	330	U	330	ug/kg wet						
Nitrobenzene	330	U	330	ug/kg wet						
N-Nitrosodi-n-propylamine	330	U	330	ug/kg wet						
N-Nitrosodiphenylamine	330	U	330	ug/kg wet						
Pentachlorophenol	1650	U	1650	ug/kg wet						
Phenanthrene	330	U	330	ug/kg wet						
Phenol	330	U	330	ug/kg wet						
Pyrene	330	U	330	ug/kg wet						
Unknown 2	292	J		ug/kg wet						
Trichloro-1-propene	2410	J		ug/kg wet						
Aldol Condensate 2	220	A, J		ug/kg wet						
Aldol Condensate 1	4810	A, J		ug/kg wet						
Unknown 1	391	J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1240*			*ug/kg wet*	*2500.0*		*50*	*25-121*		
Surrogate: Phenol-d5	*1400*			*ug/kg wet*	*2500.0*		*56*	*24-113*		
Surrogate: Nitrobenzene-d5	*707*			*ug/kg wet*	*1666.7*		*42*	*23-120*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3833 Project Manager: Joan Kessner	**Reported:** 04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
Blank (L203119-BLK1)				Prepared: 03/14/2012 Analyzed: 03/21/2012						
Surrogate: 2-Fluorobiphenyl	*844*			*ug/kg wet*	*1666.7*		*51*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1070*			*ug/kg wet*	*2500.0*		*43*	*19-122*		
Surrogate: p-Terphenyl-d14	*1050*			*ug/kg wet*	*1666.7*		*63*	*18-137*		
LCS (L203119-BS1)				Prepared: 03/14/2012 Analyzed: 03/21/2012						
1,2,4-Trichlorobenzene	900		330	ug/kg wet	2000.0		45	45-110		
1,2-Dichlorobenzene	1030		330	ug/kg wet	2000.0		52	45-105		
1,3-Dichlorobenzene	1040		330	ug/kg wet	2000.0		52	40-100		
1,4-Dichlorobenzene	1060		330	ug/kg wet	2000.0		53	35-105		
2,4,5-Trichlorophenol	1170		330	ug/kg wet	2000.0		59	30-140		
2,4,6-Trichlorophenol	887		330	ug/kg wet	2000.0		44	20-110		
2,4-Dichlorophenol	790		330	ug/kg wet	2000.0		40	40-110		
2,4-Dimethylphenol	681		330	ug/kg wet	2000.0		34	30-105		
2,4-Dinitrophenol	205	J	1650	ug/kg wet	2000.0		10*	25-130		
2,4-Dinitrotoluene	1260		330	ug/kg wet	2000.0		63	50-115		
2,6-Dinitrotoluene	1070		330	ug/kg wet	2000.0		54	40-120		
2-Chloronaphthalene	1190		330	ug/kg wet	2000.0		59	45-115		
2-Chlorophenol	1080		330	ug/kg wet	2000.0		54	45-105		
2-Methylnaphthalene	1000		330	ug/kg wet	2000.0		50	45-110		
2-Methylphenol	899		330	ug/kg wet	2000.0		45	40-120		
2-Nitroaniline	1360	J	1650	ug/kg wet	2000.0		68	45-120		
2-Nitrophenol	933		330	ug/kg wet	2000.0		47	40-110		
3,3'-Dichlorobenzidine	1180		660	ug/kg wet	2000.0		59	15-130		
3-Nitroaniline	1540	J	1650	ug/kg wet	2000.0		77	40-130		
4,6-Dinitro-2-methylphenol	642		330	ug/kg wet	2000.0		32	20-140		
4-Bromophenyl Phenyl Ether	1090		330	ug/kg wet	2000.0		54	45-115		
4-Chloro-3-methylphenol	1090		330	ug/kg wet	2000.0		54	35-115		
4-Chloroaniline	901		330	ug/kg wet	2000.0		45	10-100		
4-Chlorophenyl Phenyl Ether	1190		330	ug/kg wet	2000.0		59	45-110		
3- and/or 4-Methylphenol	986		330	ug/kg wet	2000.0		49	40-120		
4-Nitroaniline	1680		1650	ug/kg wet	2000.0		84	40-130		
4-Nitrophenol	1420	J	1650	ug/kg wet	2000.0		71	15-140		
Acenaphthene	1080		330	ug/kg wet	2000.0		54	45-110		
Acenaphthylene	833		330	ug/kg wet	2000.0		42*	45-115		
Anthracene	1180		330	ug/kg wet	2000.0		59	45-130		
Benz[a]anthracene	1260		330	ug/kg wet	2000.0		63	45-130		
Benzo[a] pyrene	1110		330	ug/kg wet	2000.0		55	45-130		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3833 Project Manager: Joan Kessner	**Reported:** 04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
LCS (L203119-BS1)				Prepared: 03/14/2012 Analyzed: 03/21/2012						
Benzo[b] fluoranthene	1490		330	ug/kg wet	2000.0		75	40-130		
Benzo[g,h,i] perylene	1490		330	ug/kg wet	2000.0		75	45-125		
Benzo[k] fluoranthene	1580		330	ug/kg wet	2000.0		79	45-125		
Bis(2-chloroethoxy) methane	907		330	ug/kg wet	2000.0		45	45-110		
Bis(2-chloroethyl) ether	1110		330	ug/kg wet	2000.0		55	40-110		
Bis(2-chloroisopropyl) ether	946		330	ug/kg wet	2000.0		47	30-115		
Bis(2-ethylhexyl) phthalate	1370		330	ug/kg wet	2000.0		69	40-145		
Butyl Benzyl Phthalate	1420		330	ug/kg wet	2000.0		71	50-125		
Carbazole	1630		330	ug/kg wet	2000.0		82	40-140		
Chrysene	1210		330	ug/kg wet	2000.0		61	45-130		
Dibenz[a,h]anthracene	884		330	ug/kg wet	2000.0		44*	45-125		
Dibenzofuran	1200		330	ug/kg wet	2000.0		60	45-120		
Diethyl Phthalate	1360		330	ug/kg wet	2000.0		68	50-125		
Dimethyl Phthalate	1200		330	ug/kg wet	2000.0		60	45-130		
Di-n-butyl Phthalate	1210		330	ug/kg wet	2000.0		61	50-130		
Di-n-octyl Phthalate	1400		330	ug/kg wet	2000.0		70	40-150		
Fluoranthene	1000		330	ug/kg wet	2000.0		50	45-130		
Fluorene	1180		330	ug/kg wet	2000.0		59	45-120		
Hexachlorobenzene	1300		330	ug/kg wet	2000.0		65	45-130		
Hexachlorobutadiene	1070		330	ug/kg wet	2000.0		53	45-105		
Hexachlorocyclopentadiene	241	J	330	ug/kg wet	2000.0		12	10-100		
Hexachloroethane	1020		330	ug/kg wet	2000.0		51	35-110		
Indeno[1,2,3-cd]pyrene	1170		330	ug/kg wet	2000.0		59	45-130		
Isophorone	928		330	ug/kg wet	2000.0		46	40-110		
Naphthalene	1080		330	ug/kg wet	2000.0		54	40-110		
Nitrobenzene	883		330	ug/kg wet	2000.0		44	40-105		
N-Nitrosodi-n-propylamine	1160		330	ug/kg wet	2000.0		58	30-130		
N-Nitrosodiphenylamine	1050		330	ug/kg wet	2000.0		53	50-120		
Pentachlorophenol	343	J	1650	ug/kg wet	2000.0		17*	25-120		
Phenanthrene	1230		330	ug/kg wet	2000.0		61	50-120		
Phenol	1140		330	ug/kg wet	2000.0		57	40-115		
Pyrene	1200		330	ug/kg wet	2000.0		60	45-125		
Surrogate: 2-Fluorophenol	*1550*			*ug/kg wet*	*2500.0*		*62*	*25-121*		
Surrogate: Phenol-d5	*1530*			*ug/kg wet*	*2500.0*		*61*	*24-113*		
Surrogate: Nitrobenzene-d5	*833*			*ug/kg wet*	*1666.7*		*50*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1050*			*ug/kg wet*	*1666.7*		*63*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*907*			*ug/kg wet*	*2500.0*		*36*	*19-122*		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
LCS (L203119-BS1)				Prepared: 03/14/2012 Analyzed: 03/21/2012						
Surrogate: p-Terphenyl-d14	*1120*			*ug/kg wet*	*1666.7*		*67*	*18-137*		
Matrix Spike (L203119-MS2)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/27/2012						
1,2,4-Trichlorobenzene	3720	J, D	4900	ug/kg wet	4950.5	4290 U	75	45-110		
1,2-Dichlorobenzene	3570	J, D	4900	ug/kg wet	4950.5	4290 U	72	45-105		
1,3-Dichlorobenzene	3450	J, D	4900	ug/kg wet	4950.5	4290 U	70	40-100		
1,4-Dichlorobenzene	3680	J, D	4900	ug/kg wet	4950.5	4290 U	74	35-105		
2,4,5-Trichlorophenol	3800	J, D	4900	ug/kg wet	4950.5	4290 U	77	30-140		
2,4,6-Trichlorophenol	3660	J, D	4900	ug/kg wet	4950.5	4290 U	74	20-110		
2,4-Dichlorophenol	4100	J, D	4900	ug/kg wet	4950.5	4290 U	83	40-110		
2,4-Dimethylphenol	4350	J, D	4900	ug/kg wet	4950.5	4290 U	88	30-105		
2,4-Dinitrophenol	24500	U	24500	ug/kg wet	4950.5	21400 U	*	25-130		
2,4-Dinitrotoluene	3850	J, D	4900	ug/kg wet	4950.5	4290 U	78	50-115		
2,6-Dinitrotoluene	3990	J, D	4900	ug/kg wet	4950.5	4290 U	81	40-120		
2-Chloronaphthalene	4060	J, D	4900	ug/kg wet	4950.5	4290 U	82	45-115		
2-Chlorophenol	4020	J, D	4900	ug/kg wet	4950.5	4290 U	81	45-105		
2-Methylnaphthalene	4160	J, D	4900	ug/kg wet	4950.5	4290 U	84	45-110		
2-Methylphenol	4170	J, D	4900	ug/kg wet	4950.5	4290 U	84	40-120		
2-Nitroaniline	4210	J, D	24500	ug/kg wet	4950.5	21400 U	85	45-120		
2-Nitrophenol	3260	J, D	4900	ug/kg wet	4950.5	4290 U	66	40-110		
3,3'-Dichlorobenzidine	4600	J, D	9800	ug/kg wet	4950.5	8570 U	93	15-130		
3-Nitroaniline	4570	J, D	24500	ug/kg wet	4950.5	21400 U	92	40-130		
4,6-Dinitro-2-methylphenol	4900	U	4900	ug/kg wet	4950.5	4290 U	*	20-140		
4-Bromophenyl Phenyl Ether	4200	J, D	4900	ug/kg wet	4950.5	4290 U	85	45-115		
4-Chloro-3-methylphenol	4060	J, D	4900	ug/kg wet	4950.5	4290 U	82	35-115		
4-Chloroaniline	3640	J, D	4900	ug/kg wet	4950.5	4290 U	73	10-100		
4-Chlorophenyl Phenyl Ether	4140	J, D	4900	ug/kg wet	4950.5	4290 U	84	45-110		
3- and/or 4-Methylphenol	4410	J, D	4900	ug/kg wet	4950.5	4290 U	89	40-120		
4-Nitroaniline	4120	J, D	24500	ug/kg wet	4950.5	21400 U	83	40-130		
4-Nitrophenol	3610	J, D	24500	ug/kg wet	4950.5	21400 U	73	15-140		
Acenaphthene	4460	J, D	4900	ug/kg wet	4950.5	4290 U	90	45-110		
Acenaphthylene	3690	J, D	4900	ug/kg wet	4950.5	4290 U	75	45-115		
Anthracene	4290	J, D	4900	ug/kg wet	4950.5	4290 U	87	45-130		
Benz[a]anthracene	4910	D	4900	ug/kg wet	4950.5	4290 U	99	45-130		
Benzo[a] pyrene	4760	J, D	4900	ug/kg wet	4950.5	4290 U	96	45-130		
Benzo[b] fluoranthene	5040	D	4900	ug/kg wet	4950.5	4290 U	102	40-130		
Benzo[g,h,i] perylene	5820	D	4900	ug/kg wet	4950.5	1150	94	45-125		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
Matrix Spike (L203119-MS2)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/27/2012						
Benzo[k] fluoranthene	4240	J, D	4900	ug/kg wet	4950.5	4290 U	86	45-125		
Bis(2-chloroethoxy) methane	4270	J, D	4900	ug/kg wet	4950.5	4290 U	86	45-110		
Bis(2-chloroethyl) ether	3900	J, D	4900	ug/kg wet	4950.5	4290 U	79	40-110		
Bis(2-chloroisopropyl) ether	3940	J, D	4900	ug/kg wet	4950.5	4290 U	80	30-115		
Bis(2-ethylhexyl) phthalate	7510	D	4900	ug/kg wet	4950.5	2270	106	40-145		
Butyl Benzyl Phthalate	5240	D	4900	ug/kg wet	4950.5	4290 U	106	50-125		
Carbazole	4900	D	4900	ug/kg wet	4950.5	4290 U	99	40-140		
Chrysene	5000	D	4900	ug/kg wet	4950.5	4290 U	101	45-130		
Dibenz[a,h]anthracene	4000	J, D	4900	ug/kg wet	4950.5	736	66	45-125		
Dibenzofuran	4420	J, D	4900	ug/kg wet	4950.5	4290 U	89	45-120		
Diethyl Phthalate	4520	J, D	4900	ug/kg wet	4950.5	4290 U	91	50-125		
Dimethyl Phthalate	4110	J, D	4900	ug/kg wet	4950.5	4290 U	83	45-130		
Di-n-butyl Phthalate	4610	J, D	4900	ug/kg wet	4950.5	4290 U	93	50-130		
Di-n-octyl Phthalate	6060	D	4900	ug/kg wet	4950.5	4290 U	122	40-150		
Fluoranthene	4840	J, D	4900	ug/kg wet	4950.5	4290 U	98	45-130		
Fluorene	4220	J, D	4900	ug/kg wet	4950.5	4290 U	85	45-120		
Hexachlorobenzene	4300	J, D	4900	ug/kg wet	4950.5	4290 U	87	45-130		
Hexachlorobutadiene	4050	J, D	4900	ug/kg wet	4950.5	4290 U	82	45-105		
Hexachlorocyclopentadiene	4900	U	4900	ug/kg wet	4950.5	4290 U	*	10-100		
Hexachloroethane	2680	J, D	4900	ug/kg wet	4950.5	4290 U	54	35-110		
Indeno[1,2,3-cd]pyrene	4970	D	4900	ug/kg wet	4950.5	952	81	45-130		
Isophorone	4070	J, D	4900	ug/kg wet	4950.5	4290 U	82	40-110		
Naphthalene	4660	J, D	4900	ug/kg wet	4950.5	4290 U	94	40-110		
Nitrobenzene	3660	J, D	4900	ug/kg wet	4950.5	4290 U	74	40-105		
N-Nitrosodi-n-propylamine	4200	J, D	4900	ug/kg wet	4950.5	4290 U	85	30-130		
N-Nitrosodiphenylamine	4500	J, D	4900	ug/kg wet	4950.5	4290 U	91	50-120		
Pentachlorophenol	1880	J, D	24500	ug/kg wet	4950.5	21400 U	38	25-120		
Phenanthrene	4580	J, D	4900	ug/kg wet	4950.5	4290 U	93	50-120		
Phenol	3820	J, D	4900	ug/kg wet	4950.5	4290 U	77	40-115		
Pyrene	4840	J, D	4900	ug/kg wet	4950.5	4290 U	98	45-125		
Surrogate: 2-Fluorophenol	*5320*			*ug/kg wet*	*6188.1*		*86*	*25-121*		
Surrogate: Phenol-d5	*5260*			*ug/kg wet*	*6188.1*		*85*	*24-113*		
Surrogate: Nitrobenzene-d5	*3410*			*ug/kg wet*	*4125.4*		*83*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*3530*			*ug/kg wet*	*4125.4*		*86*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*4300*			*ug/kg wet*	*6188.1*		*69*	*19-122*		
Surrogate: p-Terphenyl-d14	*3830*			*ug/kg wet*	*4125.4*		*93*	*18-137*		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
Matrix Spike Dup (L203119-MSD2)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/27/2012						
1,2,4-Trichlorobenzene	3410	J, D	4350	ug/kg wet	4398.8	4290 U	77	45-110	3	40
1,2-Dichlorobenzene	3260	J, D	4350	ug/kg wet	4398.8	4290 U	74	45-105	3	40
1,3-Dichlorobenzene	3160	J, D	4350	ug/kg wet	4398.8	4290 U	72	40-100	3	40
1,4-Dichlorobenzene	2930	J, D	4350	ug/kg wet	4398.8	4290 U	67	35-105	11	40
2,4,5-Trichlorophenol	2910	J, D	4350	ug/kg wet	4398.8	4290 U	66	30-140	15	40
2,4,6-Trichlorophenol	2320	J, D	4350	ug/kg wet	4398.8	4290 U	53	20-110	34	40
2,4-Dichlorophenol	3250	J, D	4350	ug/kg wet	4398.8	4290 U	74	40-110	11	40
2,4-Dimethylphenol	3990	J, D	4350	ug/kg wet	4398.8	4290 U	91	30-105	3	40
2,4-Dinitrophenol	21800	U	21800	ug/kg wet	4398.8	21400 U	*	25-130		40
2,4-Dinitrotoluene	3100	J, D	4350	ug/kg wet	4398.8	4290 U	70	50-115	10	40
2,6-Dinitrotoluene	3060	J, D	4350	ug/kg wet	4398.8	4290 U	70	40-120	15	40
2-Chloronaphthalene	3660	J, D	4350	ug/kg wet	4398.8	4290 U	83	45-115	1	40
2-Chlorophenol	3630	J, D	4350	ug/kg wet	4398.8	4290 U	83	45-105	2	40
2-Methylnaphthalene	3760	J, D	4350	ug/kg wet	4398.8	4290 U	86	45-110	2	40
2-Methylphenol	3760	J, D	4350	ug/kg wet	4398.8	4290 U	85	40-120	2	40
2-Nitroaniline	3490	J, D	21800	ug/kg wet	4398.8	21400 U	79	45-120	7	40
2-Nitrophenol	2290	J, D	4350	ug/kg wet	4398.8	4290 U	52	40-110	23	40
3,3'-Dichlorobenzidine	3950	J, D	8710	ug/kg wet	4398.8	8570 U	90	15-130	3	40
3-Nitroaniline	3460	J, D	21800	ug/kg wet	4398.8	21400 U	79	40-130	16	40
4,6-Dinitro-2-methylphenol	4350	U	4350	ug/kg wet	4398.8	4290 U	*	20-140		40
4-Bromophenyl Phenyl Ether	3540	J, D	4350	ug/kg wet	4398.8	4290 U	80	45-115	5	40
4-Chloro-3-methylphenol	3890	J, D	4350	ug/kg wet	4398.8	4290 U	89	35-115	8	40
4-Chloroaniline	2890	J, D	4350	ug/kg wet	4398.8	4290 U	66	10-100	11	40
4-Chlorophenyl Phenyl Ether	3720	J, D	4350	ug/kg wet	4398.8	4290 U	84	45-110	0.9	40
3- and/or 4-Methylphenol	4080	J, D	4350	ug/kg wet	4398.8	4290 U	93	40-120	4	40
4-Nitroaniline	3690	J, D	21800	ug/kg wet	4398.8	21400 U	84	40-130	1	40
4-Nitrophenol	4110	J, D	21800	ug/kg wet	4398.8	21400 U	93	15-140	24	40
Acenaphthene	3760	J, D	4350	ug/kg wet	4398.8	4290 U	86	45-110	5	40
Acenaphthylene	3410	J, D	4350	ug/kg wet	4398.8	4290 U	78	45-115	4	40
Anthracene	3630	J, D	4350	ug/kg wet	4398.8	4290 U	82	45-130	5	40
Benz[a]anthracene	4190	J, D	4350	ug/kg wet	4398.8	4290 U	95	45-130	4	40
Benzo[a] pyrene	3840	J, D	4350	ug/kg wet	4398.8	4290 U	87	45-130	10	40
Benzo[b] fluoranthene	3900	J, D	4350	ug/kg wet	4398.8	4290 U	89	40-130	14	40
Benzo[g,h,i] perylene	4410	D	4350	ug/kg wet	4398.8	1150	74	45-125	24	40
Benzo[k] fluoranthene	3730	J, D	4350	ug/kg wet	4398.8	4290 U	85	45-125	1	40
Bis(2-chloroethoxy) methane	3770	J, D	4350	ug/kg wet	4398.8	4290 U	86	45-110	0.7	40

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/02/2012 11:12

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L203119 - SW 3540C										
Matrix Spike Dup (L203119-MSD2)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/27/2012						
Bis(2-chloroethyl) ether	4170	J, D	4350	ug/kg wet	4398.8	4290 U	95	40-110	18	40
Bis(2-chloroisopropyl) ether	3820	J, D	4350	ug/kg wet	4398.8	4290 U	87	30-115	9	40
Bis(2-ethylhexyl) phthalate	6120	D	4350	ug/kg wet	4398.8	2270	88	40-145	19	40
Butyl Benzyl Phthalate	4350	J, D	4350	ug/kg wet	4398.8	4290 U	99	50-125	7	40
Carbazole	4010	J, D	4350	ug/kg wet	4398.8	4290 U	91	40-140	8	40
Chrysene	4350	J, D	4350	ug/kg wet	4398.8	4290 U	99	45-130	2	40
Dibenz[a,h]anthracene	3080	J, D	4350	ug/kg wet	4398.8	736	53	45-125	21	40
Dibenzofuran	3750	J, D	4350	ug/kg wet	4398.8	4290 U	85	45-120	5	40
Diethyl Phthalate	3690	J, D	4350	ug/kg wet	4398.8	4290 U	84	50-125	9	40
Dimethyl Phthalate	3540	J, D	4350	ug/kg wet	4398.8	4290 U	80	45-130	3	40
Di-n-butyl Phthalate	3870	J, D	4350	ug/kg wet	4398.8	4290 U	88	50-130	6	40
Di-n-octyl Phthalate	5290	D	4350	ug/kg wet	4398.8	4290 U	120	40-150	2	40
Fluoranthene	4030	J, D	4350	ug/kg wet	4398.8	4290 U	92	45-130	6	40
Fluorene	3870	J, D	4350	ug/kg wet	4398.8	4290 U	88	45-120	3	40
Hexachlorobenzene	3830	J, D	4350	ug/kg wet	4398.8	4290 U	87	45-130	0.2	40
Hexachlorobutadiene	3670	J, D	4350	ug/kg wet	4398.8	4290 U	83	45-105	2	40
Hexachlorocyclopentadiene	4350	U	4350	ug/kg wet	4398.8	4290 U	*	10-100		40
Hexachloroethane	2350	J, D	4350	ug/kg wet	4398.8	4290 U	53	35-110	1	40
Indeno[1,2,3-cd]pyrene	3860	J, D	4350	ug/kg wet	4398.8	952	66	45-130	20	40
Isophorone	3880	J, D	4350	ug/kg wet	4398.8	4290 U	88	40-110	7	40
Naphthalene	4090	J, D	4350	ug/kg wet	4398.8	4290 U	93	40-110	1	40
Nitrobenzene	3440	J, D	4350	ug/kg wet	4398.8	4290 U	78	40-105	6	40
N-Nitrosodi-n-propylamine	4100	J, D	4350	ug/kg wet	4398.8	4290 U	93	30-130	9	40
N-Nitrosodiphenylamine	3810	J, D	4350	ug/kg wet	4398.8	4290 U	87	50-120	5	40
Pentachlorophenol	2330	J, D	21800	ug/kg wet	4398.8	21400 U	53	25-120	33	40
Phenanthrene	4120	J, D	4350	ug/kg wet	4398.8	4290 U	94	50-120	1	40
Phenol	3930	J, D	4350	ug/kg wet	4398.8	4290 U	89	40-115	15	40
Pyrene	4030	J, D	4350	ug/kg wet	4398.8	4290 U	92	45-125	7	40
Surrogate: 2-Fluorophenol	*3960*			*ug/kg wet*	*5498.5*		*72*	*25-121*		
Surrogate: Phenol-d5	*4750*			*ug/kg wet*	*5498.5*		*86*	*24-113*		
Surrogate: Nitrobenzene-d5	*2990*			*ug/kg wet*	*3665.7*		*81*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*3230*			*ug/kg wet*	*3665.7*		*88*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*2100*			*ug/kg wet*	*5498.5*		*38*	*19-122*		
Surrogate: p-Terphenyl-d14	*3440*			*ug/kg wet*	*3665.7*		*94*	*18-137*		

PREPARATION BENCH SHEET

L203119

Lionville Laboratory

Printed: 3/15/2012 1:59:40PM

Matrix: Solid **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1200170**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1203028-01	8270C TCL SVOC	03/14/2012 11:37	10.76	4				500	Argonne National Laboratory	Short List - Report @LOD WATERS
1203028-02	8270C TCL SVOC	03/14/2012 11:37	10.76	1				500	Argonne National Laboratory	Short List - Report @LOD WATERS
1203045-01	8270C TCL SVOC	03/14/2012 11:37	13.86	2				500	WC-Hanford, Inc.	
1203050-01	8270C TCL SVOC	03/14/2012 11:37	30.22	1				500	WC-Hanford, Inc.	
L203119-BLK1	QC	03/14/2012 11:37	30	1				500		
L203119-BS1	QC	03/14/2012 11:37	30	1	1200337		600	500		
L203119-MS1	QC	03/14/2012 11:37	10.39	4	1200337	1203028-01	600	500		
L203119-MS2	QC	03/14/2012 11:37	12.12	2	1200337	1203045-01	600	500		
L203119-MS3	QC	03/14/2012 11:37	29.52	1	1200337	1203050-01	600	500		
L203119-MSD1	QC	03/14/2012 11:37	11.02	4	1200337	1203028-01	600	500		
L203119-MSD2	QC	03/14/2012 11:37	13.64	2	1200337	1203045-01	600	500		
L203119-MSD3	QC	03/14/2012 11:37	30.29	1	1200337	1203050-01	600	500		

Extracts Relinquished By 3/18/12 1310 Date

Extracts Received By 3/19/12 600 Date

Lionville Laboratory Use Only: 1203045

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client: WC Hanford SAFH RC-150
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: STD TAT: 21 Days

Date Rec'd: 3-13-12 Date Due: 4-3-12

Refrigerator #		A							B		C					
#/Type Container	Liquid		1						1		1					
	Solid		1AG						1AG		1AG					
Volume	Liquid															
	Solid		60						60		120					
Preservatives			—						—		—					
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal (HG)	CN	TCLP Met	TCLP Hg				
		Lionville Laboratory Use Only														
			8270 8260	Clp PCB 50					Met 1		TCLP RCRA					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
W Water, WW Waste Water, GW Groundwater, WST Waste, WI Wipe, SO Solid, S Soil, SL Sludge, SE Sediment, PC Paint Chips, O Oil, NAL Non-Aqueous Liquid, L Leachate, A Air, T Tissue, F Fish	01	T1NLKO	✓	✓	S	3-7-12	0934		X						X		X	X				

Special Instructions:

Met 1 = HSL + B, Mo, Si, Zr
(NOTL)

Special Instructions:

1. Leach and hold TCLP metals until directed to by client
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	3/13/12	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-150-019	Page 1 of ~~2~~ 1

Collector J. Russell	**Company Contact** Joan Kessner **Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9L **Data Turnaround** 21 Days 3/7/12
Project Designation 300 Area Field Remediation - Other	**Sampling Location** 300 - 264 [327 Bldg] - RPS Sump	**SAF No.** RC-150	
Ice Chest No. ERC-01-021 ~~N/A~~ 3-7-12 cmB	**Field Logbook No.** EL-1663-01 **COA** R302642600	**Method of Shipment** Fed Ex/Hand Deliver	
Shipped To 3/7/12 ~~EBERLINE SERVICES~~ LIONVILLE	**Offsite Property No.** ~~N/A~~ 3-7-12 cmB NA AJ 3-12-12 A110276	**Bill of Lading/Air Bill No.** ~~N/A~~ 3-7-12 cmB See RSR OSPC AJ 3-12-12	

POSSIBLE SAMPLE HAZARDS/REMARKS

~~Potential~~ Radioactive < DOT Limits AJ 3-12-12

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	None	Cool 4C	None	None	None	None	None	None	None
Type of Container	G/P	aG	aG	G/P	G/P	G/P	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	120mL	60mL	500mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	See item (3) in Special Instructions.	Isotopic Uranium	Isotopic Plutonium	Americium-241	Strontium-89,90 -- Total Sr	Technetium-99	Plutonium-241

Sample No.	Matrix *	Sample Date	Sample Time										RCF
J1NLK0	OTHER	3/7/2012	0934	✓	✓	✓							32279

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	3/7/12 1555	DAVID BECKER [signature]	3/7/12 1555
DAVID BECKER [signature]	3/7/12 1700	[signature] Bingham	060#2 3-7-12 1700
[signature] Bingham	060#2 WOH 3-12-12 1200	Fed Ex	
Fed Ex	3-13-12 0955	VICTOR HERNANDEZ [signature]	3-13-12 0955

SPECIAL INSTRUCTIONS

Please Note: For the samples designated for TCLP Metals Analysis - Leach and Hold until further direction is provided.

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV) {Mercury}

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

~~(3) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Niobium-94, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}~~ 3/7/12

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 AJ DATE 3-12-12

WCH-EE-011

000000021

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W C Hanford

Project/SAF/SOW/Release #: RC-150

Date: 3/13/12

LvL Batch #: 1203045

Sample Custodian: Pedro Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7981 5890 0137
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 2.7	°C	Cooler # ERC-01-021
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
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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1NLK0	1203045-01	Other Solid	03/07/2012 09:34	03/13/2012 09:55

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-150
LVL#: 1203045
SDG/SAF#: K3833/RC-150

W.O.#: 60049-001-001-0001-00
Date Received: 03-13-12

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 1 other solid sample and 1 TCLP leachate sample.

2. The samples were prepared and analyzed in accordance with methods listed on the data report forms. The solid sample was reported on a wet weight, 'as-received' basis.

   The solid sample was reanalyzed and reported with a 12-fold dilution for Zinc due to high Zinc concentration in the sample.

   The solid sample was analyzed and reported with a 10-fold dilution for Mercury due to high concentration of Mercury in the sample. The duplicate L203128-DUP1 and matrix spike L203128-MS1 were analyzed and reported with 20-fold dilutions for Mercury due to high Mercury concentration in the samples.

   The TCLP leachate sample was analyzed and reported with a 5-fold dilution for ICP metals due to sample matrix.

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

4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvL'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, MB value less than 5% of the RCRA limit, samples were greater than 20X MB value}.

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 22 pages.

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. All laboratory control samples (LCS) were within the 80-120% control limits.

10. The matrix spike (MS) recoveries for 24 analytes were outside the 75-125% control limits.

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
J1NLK0	Aluminum	42,000	87.3
	Antimony	100	132.7
	Arsenic	100	141.2
	Barium	1,100	110.1
	Beryllium	100	91.3
	Boron	100	131.9
	Cadmium	100	105.5
	Calcium	80,800	117.3
	Chromium	100	90.5
	Cobalt	100	106.2
	Copper	2,600	118.0
	Iron	82,000	117.4
	Lead	500	84.4
	Magnesium	21,600	104.8
	Molybdenum	100	111.8
	Nickel	200	81.7
	Potassium	4,000	90.1
	Selenium	100	95.4
	Silver	100	92.7
	Sodium	4,000	99.2
	Vanadium	1,000	91.0
	Zinc	1,100	114.0
	Zirconium	1,000	90.6
	Mercury	1.0	113.0

12. The duplicate analyses for 11 analytes were outside the 20% Relative Percent Difference (RPD) control limits. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The sample results for Beryllium, Cobalt, and Silver were less than ten times the MDL.

13. The TCLP extract from sample J1NLK0 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The matrix spike (MS) concentration for Mercury was equivalent to the regulatory level (200 ppb) as per SW846 method 1311. The required spike concentration is above the linear range of

the instrument, resulting in a 50-fold dilution. The MS recovery was greater than 50% as per method criteria.

14. The TCLP duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. The ± 20% RPD control limit applies to sample results greater than ten times the MDL.

15. 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.

16. 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

4/13/12
Date

alm/03-045

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

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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Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

J1NLK0
1203045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**6330**		5.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Antimony	**16.0**		0.600	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Arsenic	**17.7**		1.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Barium	**81.0**		0.500	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Beryllium	**0.212**		0.0500	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Boron	**16.3**		2.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Cadmium	**2.87**		0.200	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Calcium	**32800**		100	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Chromium	**38.8**		0.200	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Cobalt	**6.17**		2.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Copper	**1050**		1.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Iron	**31200**		20.0	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Lead	**147**		0.500	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Magnesium	**2420**		75.0	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Manganese	**190**		5.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Molybdenum	**6.77**		2.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Nickel	**29.3**		4.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Potassium	**633**		400	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Selenium	1.00	U	1.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Silicon	**162**		2.00	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Silver	**0.937**		0.200	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Sodium	**757**		50.0	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Vanadium	**29.3**		2.50	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Zinc	**2180**		120	mg/kg wet	12	L203116	03/14/2012	03/15/2012	6010B
Zirconium	**12.3**		2.50	mg/kg wet	1	L203116	03/14/2012	03/15/2012	6010B
Mercury	**8.69**		0.250	mg/kg wet	10	L203128	03/15/2012	03/16/2012	7471A

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J1NLK0

1203045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	0.0750	U	0.0750	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Barium	**0.356**		0.00500	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Cadmium	0.0150	U	0.0150	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Chromium	**0.00590**	B	0.0250	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Lead	0.0500	U	0.0500	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Selenium	0.100	U	0.100	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Silver	0.0300	U	0.0300	mg/L	5	L204091	04/10/2012	04/11/2012	6010
Mercury	0.000200	U	0.000200	mg/L	1	L204086	04/09/2012	04/10/2012	7470

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2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

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 L203116 - SW 3050B										
Blank (L203116-BLK1)				Prepared: 03/14/2012 Analyzed: 03/15/2012						
Aluminum	5.00	U	5.00	mg/kg wet						
Antimony	0.600	U	0.600	mg/kg wet						
Arsenic	1.00	U	1.00	mg/kg wet						
Barium	0.500	U	0.500	mg/kg wet						
Beryllium	0.0500	U	0.0500	mg/kg wet						
Boron	2.00	U	2.00	mg/kg wet						
Cadmium	0.200	U	0.200	mg/kg wet						
Calcium	100	U	100	mg/kg wet						
Chromium	0.200	U	0.200	mg/kg wet						
Cobalt	2.00	U	2.00	mg/kg wet						
Copper	1.00	U	1.00	mg/kg wet						
Iron	20.0	U	20.0	mg/kg wet						
Lead	0.500	U	0.500	mg/kg wet						
Magnesium	75.0	U	75.0	mg/kg wet						
Manganese	5.00	U	5.00	mg/kg wet						
Molybdenum	2.00	U	2.00	mg/kg wet						
Nickel	4.00	U	4.00	mg/kg wet						
Potassium	400	U	400	mg/kg wet						
Selenium	1.00	U	1.00	mg/kg wet						
Silicon	2.00	U	2.00	mg/kg wet						
Silver	0.200	U	0.200	mg/kg wet						
Sodium	50.0	U	50.0	mg/kg wet						
Vanadium	2.50	U	2.50	mg/kg wet						
Zinc	10.0	U	10.0	mg/kg wet						
Zirconium	2.50	U	2.50	mg/kg wet						
Duplicate (L203116-DUP1)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/15/2012						
Aluminum	6620		4.39	mg/kg wet		6330			4.42	20
Antimony	3.63		0.526	mg/kg wet		16.0			126*	20
Arsenic	15.0		0.877	mg/kg wet		17.7			16.4	20
Barium	95.7		0.439	mg/kg wet		81.0			16.7	20
Beryllium	0.170		0.0439	mg/kg wet		0.212			21.9*	20
Boron	8.48		1.75	mg/kg wet		16.3			63.1*	20
Cadmium	2.52		0.175	mg/kg wet		2.87			13.3	20
Calcium	43400		87.7	mg/kg wet		32800			27.9*	20
Chromium	25.9		0.175	mg/kg wet		38.8			40.1*	20
Cobalt	4.65		1.75	mg/kg wet		6.17			28.1*	20

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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 L203116 - SW 3050B										
Duplicate (L203116-DUP1)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/15/2012						
Copper	682		0.877	mg/kg wet		1050			42.6*	20
Iron	29800		17.5	mg/kg wet		31200			4.81	20
Lead	102		0.439	mg/kg wet		147			36.5*	20
Magnesium	2370		65.8	mg/kg wet		2420			1.73	20
Manganese	166		4.39	mg/kg wet		190			13.0	20
Molybdenum	104		1.75	mg/kg wet		6.77			176*	20
Nickel	18.6		3.51	mg/kg wet		29.3			44.8*	20
Potassium	509		351	mg/kg wet		633			21.6*	20
Selenium	0.877	U	0.877	mg/kg wet		1.00 U				20
Silicon	149		1.75	mg/kg wet		162			8.64	20
Silver	0.754		0.175	mg/kg wet		0.937			21.6*	20
Sodium	594		43.9	mg/kg wet		757			24.1*	20
Vanadium	24.1		2.19	mg/kg wet		29.3			19.6	20
Zinc	1790		105	mg/kg wet		2180			20.0	20
Zirconium	11.1		2.19	mg/kg wet		12.3			10.5	20
Matrix Spike (L203116-MS1)		**Source: 1203045-01**		Prepared: 03/14/2012 Analyzed: 03/15/2012						
Aluminum	6140		4.31	mg/kg wet	172.41	6330	-113*	75-125		20
Antimony	17.7		0.517	mg/kg wet	43.103	16.0	3.99*	75-125		20
Arsenic	134		0.862	mg/kg wet	172.41	17.7	67.2*	75-125		20
Barium	200		0.431	mg/kg wet	172.41	81.0	69.2*	75-125		20
Beryllium	3.06		0.0431	mg/kg wet	4.3103	0.212	66.1*	75-125		20
Boron	64.6		1.72	mg/kg wet	86.207	16.3	56.0*	75-125		20
Cadmium	5.39		0.172	mg/kg wet	4.3103	2.87	58.3*	75-125		20
Calcium	31300		86.2	mg/kg wet	2155.2	32800	-66.1*	75-125		20
Chromium	44.2		0.172	mg/kg wet	17.241	38.8	31.1*	75-125		20
Cobalt	32.7		1.72	mg/kg wet	43.103	6.17	61.5*	75-125		20
Copper	692		0.862	mg/kg wet	21.552	1050	-1670*	75-125		20
Iron	31600		17.2	mg/kg wet	86.207	31200	410*	75-125		20
Lead	148		0.431	mg/kg wet	43.103	147	2.56*	75-125		20
Magnesium	3440		64.7	mg/kg wet	2155.2	2420	47.7*	75-125		20
Manganese	239		4.31	mg/kg wet	43.103	190	113	75-125		20
Molybdenum	65.4		1.72	mg/kg wet	86.207	6.77	68.0*	75-125		20
Nickel	50.9		3.45	mg/kg wet	43.103	29.3	50.2*	75-125		20
Potassium	1960		345	mg/kg wet	2155.2	633	61.4*	75-125		20
Selenium	112		0.862	mg/kg wet	172.41	1.00 U	64.8*	75-125		20
Silicon	262		1.72	mg/kg wet	86.207	162	115	75-125		20

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2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

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 L203116 - SW 3050B									
Matrix Spike (L203116-MS1)		**Source: 1203045-01**	Prepared: 03/14/2012 Analyzed: 03/15/2012						
Silver	3.88	0.172	mg/kg wet	4.3103	0.937	68.3*	75-125		20
Sodium	2110	43.1	mg/kg wet	2155.2	757	62.8*	75-125		20
Vanadium	55.5	2.16	mg/kg wet	43.103	29.3	60.8*	75-125		20
Zinc	1490	103	mg/kg wet	43.103	2180	-1600*	75-125		20
Zirconium	287	2.16	mg/kg wet	431.03	12.3	63.8*	75-125		20
Reference (L203116-SRM1)			Prepared: 03/14/2012 Analyzed: 03/15/2012						
Aluminum	9910	12.9	mg/kg wet	6670.0		149	0-200.89		
Antimony	56.6	1.55	mg/kg wet	53.000		107	0-235.8		
Arsenic	108	2.59	mg/kg wet	114.00		94.7	82.8-117.54		
Barium	278	1.29	mg/kg wet	307.00		90.5	79.8-120.2		
Beryllium	101	0.129	mg/kg wet	108.00		93.4	82.8-117.6		
Boron	77.5	5.17	mg/kg wet	85.100		91.0	67.5-132.8		
Cadmium	214	0.517	mg/kg wet	225.00		95.3	83.6-116.4		
Calcium	3020	259	mg/kg wet	3360.0		89.9	83.3-116.9		
Chromium	75.0	0.517	mg/kg wet	77.200		97.1	73.3-126.4		
Cobalt	154	5.17	mg/kg wet	166.00		92.7	80.7-118.7		
Copper	257	2.59	mg/kg wet	271.00		94.9	80.8-119.2		
Iron	7930	51.7	mg/kg wet	8420.0		94.2	78.6-121.1		
Lead	167	1.29	mg/kg wet	190.00		87.7	81.6-118.4		
Magnesium	7610	194	mg/kg wet	8570.0		88.8	83.2-116.7		
Manganese	861	12.9	mg/kg wet	965.00		89.3	69.3-130.5		
Molybdenum	230	5.17	mg/kg wet	235.00		97.7	76.2-123.8		
Nickel	208	10.3	mg/kg wet	221.00		93.9	79.6-120.8		
Potassium	13100	1030	mg/kg wet	14400		91.2	81.9-118.1		
Selenium	173	2.59	mg/kg wet	187.00		92.5	75.9-124.6		
Silicon	433	5.17	mg/kg wet	807.00		53.7	0-219.3		
Silver	77.6	0.517	mg/kg wet	83.500		92.9	82.7-117.1		
Sodium	8710	129	mg/kg wet	9730.0		89.5	82.5-117.2		
Vanadium	99.8	6.47	mg/kg wet	98.700		101	75.9-123.6		
Zinc	188	25.9	mg/kg wet	199.00		94.3	78.4-121.6		

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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 L203128 - SW 7471A Prep										
Blank (L203128-BLK1)				Prepared: 03/15/2012 Analyzed: 03/16/2012						
Mercury	0.0300	U	0.0300	mg/kg wet						
Duplicate (L203128-DUP1)		**Source: 1203045-01**		Prepared: 03/15/2012 Analyzed: 03/16/2012						
Mercury	16.2		0.545	mg/kg wet		8.69			60.4*	20
Matrix Spike (L203128-MS1)		**Source: 1203045-01**		Prepared: 03/15/2012 Analyzed: 03/16/2012						
Mercury	15.9		0.500	mg/kg wet	0.13889	8.69	5160*	75-125		20
Reference (L203128-SRM1)				Prepared: 03/15/2012 Analyzed: 03/16/2012						
Mercury	1.30		0.0273	mg/kg wet	1.2900		100	62.6-138		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

TCLP Metals by SW846 1311 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 L204086 - SW 7470A Prep										
Blank (L204086-BLK1)				Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.000200	U	0.000200	mg/L						
Blank (L204086-BLK2)				Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.000200	U	0.000200	mg/L						
LCS (L204086-BS1)				Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.00514		0.000200	mg/L	0.0050000		103	80-120		20
Duplicate (L204086-DUP1)		**Source: 1203045-01**		Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.000200	U	0.000200	mg/L		0.000200 U				20
Matrix Spike (L204086-MS1)		**Source: 1203045-01**		Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.214		0.0100	mg/L	0.20000	0.000200 U	107	50-1000		20
Batch L204091 - SW 3010A										
Blank (L204091-BLK1)				Prepared: 04/10/2012 Analyzed: 04/11/2012						
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.00100	U	0.00100	mg/L						
Cadmium	0.00300	U	0.00300	mg/L						
Chromium	0.00500	U	0.00500	mg/L						
Lead	0.0100	U	0.0100	mg/L						
Selenium	0.0200	U	0.0200	mg/L						
Silver	0.00600	U	0.00600	mg/L						
Blank (L204091-BLK2)				Prepared: 04/10/2012 Analyzed: 04/11/2012						
Arsenic	0.0750	U	0.0750	mg/L						
Barium	0.00500	U	0.00500	mg/L						
Cadmium	0.0150	U	0.0150	mg/L						
Chromium	0.0250	U	0.0250	mg/L						
Lead	0.0500	U	0.0500	mg/L						
Selenium	0.100	U	0.100	mg/L						
Silver	0.0300	U	0.0300	mg/L						

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3833	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/12/2012 07:43

TCLP Metals by SW846 1311 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 L204091 - SW 3010A										
LCS (L204091-BS1)				Prepared: 04/10/2012 Analyzed: 04/11/2012						
Arsenic	10.3		0.0150	mg/L	10.000		103	80-120		20
Barium	5.17		0.00100	mg/L	5.0000		103	80-120		20
Cadmium	0.264		0.00300	mg/L	0.25000		106	80-120		20
Chromium	0.512		0.00500	mg/L	0.50000		102	80-120		20
Lead	2.49		0.0100	mg/L	2.5000		99.6	80-120		20
Selenium	10.2		0.0200	mg/L	10.000		102	80-120		20
Silver	0.511		0.00600	mg/L	0.50000		102	80-120		20
Duplicate (L204091-DUP1)		**Source: 1203045-01**		Prepared: 04/10/2012 Analyzed: 04/11/2012						
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.354		0.00500	mg/L		0.356			0.648	20
Cadmium	0.0150	U	0.0150	mg/L		0.0150 U				20
Chromium	0.00527	B	0.0250	mg/L		0.00590			11.3	20
Lead	0.0500	U	0.0500	mg/L		0.0500 U				20
Selenium	0.100	U	0.100	mg/L		0.100 U				20
Silver	0.0300	U	0.0300	mg/L		0.0300 U				20
Matrix Spike (L204091-MS1)		**Source: 1203045-01**		Prepared: 04/10/2012 Analyzed: 04/11/2012						
Arsenic	5.26		0.0750	mg/L	5.0000	0.0750 U	105	50-1000		20
Barium	97.9		0.00500	mg/L	10.000	0.356	975	50-1000		20
Cadmium	1.05		0.0150	mg/L	1.0000	0.0150 U	105	50-1000		20
Chromium	4.91		0.0250	mg/L	5.0000	0.00590	98.0	50-1000		20
Lead	4.87		0.0500	mg/L	5.0000	0.0500 U	97.3	50-1000		20
Selenium	1.02		0.100	mg/L	1.0000	0.100 U	102	50-1000		20
Silver	4.94		0.0300	mg/L	5.0000	0.0300 U	98.9	50-1000		20

Lionville Laboratory Logbook #: 1097

SAMPLE DIGESTION RECORD

Digestion Batch #: L203116
Date/Time Initiated: 3/14/12 1105
Date/Time Completed: 3/14/12 1625
Analyst: JJS
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.

Digested / Undigested (circle one)
Balance #: B14
Balance Cal Verification: Y NA
Temp: 45
BLOCK 1 2 (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
1203095-01		0.50	50		TO	Coarse	Brown	Rocks	N/A
L203116-Dp1		0.57	50						
* MS1	0.5	0.58	50						
-BLK1		0.50	50			Coarse	Boiling chips		
-SRM1		0.58	50			Fine	pink sand		

JJS 3/14/12

Spiking IDs / Expiration Date:
MS#: 1101735
LCS#: 1101357

Reagent IDs:
HNO_3 K44023
HCl K30036
H_2O_2 K09A03
1:1 HNO_3 637-056-01
1:1 HCl

File ID#:

Data Review By/Date: 3/15/12

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*: 6072-091-12 250mL

Page #:

Lionville Laboratory Logbook #: 1111

SAMPLE DIGESTION RECORD

Digestion Batch #: L204091
Date/Time Initiated: 9/10/12 0910
Date/Time Completed: 9/11/12 1020
Analyst: SS
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

Digested / Undigested (circle one)
Balance #: N/A
Balance Cal Verification: Y N/A
Temp: 98
BLOCK 1 2 3 (circle one)

C/C-clear/colorless

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1203045-01		50	50	<2	TC	N/A	C/C	N/A	N/A
L204091 Rgl		50	50	<2					
-MSI	0.5	50	50						
-MSI		50	50				C/C		
-MSI	0.5	50	50				C/C		
† -MSI		50	50	<2			C/C		

SS
9/11/12

Spiking IDs / Expiration Date:
MS#: 1200288
1101851
LCS#: 1200958

Reagent IDs:
HNO_3 K49023
HCl
H_2O_2
1:1 HNO_3
1:1 HCl 637-061-05

File ID#:

Data Review By/Date:

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Page #:

†: Associated with L203096.

PREPARATION BENCH SHEET

L204091

Lionville Laboratory

Printed: 4/11/2012 12:32:28PM

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Matrix: Solid **Prepared using: METALS - SW 3010A** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1203045-01	1311/6010B TCLP RCRA ICP MET	04/10/2012 08:53	50	50					WC-Hanford, Inc.	
L204091-BLK1	QC	04/10/2012 08:53	50	50						
L204091-BLK2	QC	04/10/2012 08:53	50	50						Associated with L204091.
L204091-BS1	QC	04/10/2012 08:53	50	50	1200458		500			
L204091-DUP1	QC	04/10/2012 08:53	50	50		1203045-01				
L204091-MS1	QC	04/10/2012 08:53	50	50	1200388	1203045-01	500			

JJS 4/11/12

Extracts Relinquished By Date

Preeter 04/11/12

Extracts Received By Date

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1094

Analyst: UB
Date 3/15/12
Start Time/Temp: 1215 | 93°
End Time/Temp: 1245 | 94°

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

Prep Batch: L203128
Worksheet: HG
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				10 mL	50 10mL	
0.2 µg/L		0.100		10 mL	50 10mL	
1.0		0.500		10 mL	50 10mL	
2.0		1.000		10 mL	50 10mL	
5.0		2.500		10 mL	50 10mL	
10.0		5.000		10 mL	50 10mL	
ICV		0.125	2.5	10 mL	50 10mL	
CCV		0.250	5.0	10mL	50	
ICB/CCB				10mL	50	
L203128-BLK1				0.30	50	
SRM1		✱	✱	0.33	50	
1203045-01				0.36	50	
01R				0.33	50	
01S		0.500	1.0	0.36	50	
1203049-01				0.35	50	
01R				0.39	50	
01S		0.500	1.0	0.39	50	
1203050-01				0.38	50	
01R				0.31	50	
01S		0.500	1.0	0.39	50	
1203054-01				0.38	50	
01R				0.31	50	
01S		0.500	1.0	0.38	50	
02				0.34	50	
03				0.31	50	
		03/15/12				

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1101356B	3/15/12 1010
ICV/CCV/LCS	IV 1101256A	↓

Reviewed By/Date: [illegible] 3/20/12

se book # 9368 for std traceability information

Soil LCS True Value = 1.29 mg/Kg
Standard # 1101357 ✱

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

ME-HgCVAA-Prep0910

Page #:

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Lionville Laboratory

MERCURY PREPARATION

Logbook # 1094

Analyst: [illegible]
Date 4/9/12
Start Time/Temp: 2005/93°
End Time/Temp: 2215/96°

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

Prep Batch: L204086
Worksheet: HG04/001
SOP No. ME-HgCVAA
BLOCK 1 (3) 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				35	35	
0.2 ug/L		0.070		35	35	
1.0 ug/L		0.350		35	35	
2.0 ug/L		0.700		35	35	
5.0 ug/L	W.E. MW 4/9/12	~~0~~ 1.750		35	35	
10.0 ug/L		3.500		35	35	
ICV		0.0875	2.5	35	35	
CCV		0.175	5.0	35	35	
ICB/CCB				35	35	
L204086-BLK1				35	35	
MS1		0.175	5.0	35	35	
BLK2	<			35	35	L203896
BLK3	<			35	35	L204040
BLK4	<			35	35	L204054
1203045-01	<			35	35	RAD
L204086-DUP1	<			35	35	↓
MS1		0.700	200	35	35	↓
1203085-01	<			35	35	
L204086-DUP2	<		W.E. MW 4/9/12	~~35~~ 35	35	
MS2		0.700	S.E. MW 4/10/12 ~~20~~ 200	35	35	
1203021-01	<			35	35	RAD
L204086-DUP3	<			35	35	↓
MS3		0.700	200	35	35	↓
1204023-01	<			35	35	
L204086-DUP4	<			35	35	
MS4		0.700	200	35	35	
		MW 4/9/12				

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1101430	4/9/12 1315
ICV/CCV/LCS	IV 1101427	↓

Reviewed By/Date: [illegible] 4/11/12

se book # 9368 for std traceability information

Soil LCS True Value = N/A mg/Kg
Standard # N/A

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

ME-HgCVAA-Prep0910

Page #:

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Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 1101

Start Date: 3-13-12 Start Time: 12:11 Analyst: RH SOP: SPI-1311.1	End Date: 3-14-12 End Time: 7:00 Analyst: RH Method: 1311.1	Tumbler Speed: 30 RPM Leachate Batch #: L203096 Leachate Page: 1 of 1 Room Temp. (°C): Start 21 /Finish 21 Acceptance Criteria: 23°C ± 2°

LvL #: 1203095-01 Client ID#: JINLKO pH After 5 Min: 11.05 pH After Acid/Heat: 1.82 Extraction Fluid/pH: #1 4.92 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 1000 pH After Extraction: 11.21	Initial Filtration Data and Comments: Solids: _____% / NA RAD I Initial Filtrate Added: _____
LvL #: L203096 Client ID#: pH After 5 Min: N/A pH After Acid/Heat: Extraction Fluid/pH: Sample Wt.(g): N/A Extract Fluid Vol.(mL): pH After Extraction:	Initial Filtration Data and Comments: Solids: _____% / NA Blank Initial Filtrate Added: _____
LvL #: Client ID#: pH After 5 Min: pH After Acid/Heat: Extraction Fluid/pH: Sample Wt.(g): Extract Fluid Vol.(mL): pH After Extraction:	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: Client ID#: pH After 5 Min: pH After Acid/Heat: Extraction Fluid/pH: Sample Wt.(g): Extract Fluid Vol.(mL): pH After Extraction:	Initial Filtration Data and Comments: Solids: _____% / NA RH Initial Filtrate Added: _____

Standard	ID	Prep Date	Expir Date
MS			

Reviewed By/Date aem 3/19/12

SPI-1311.1-A-0310

Page #

Lionville Laboratory Use Only

1203045

Revision

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client: WC Hanford SAFH RC-150
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: STD TAT: 21 Days
Date Rec'd: 3-13-12 Date Due: 4-3-12

Refrigerator #		A						B		C				
		1						1		1				
#/Type Container	Liquid													
	Solid	1AG						1AG		1AG				
Volume	Liquid													
	Solid	60						60		120				
Preservatives		—						—		—				
ANALYSES REQUESTED		ORGANIC						INORG						
		VOA	BNA	Pest/PCB	Herb			Metal (HG)	CN	TCLP Met	TCLP Hg			
			8270 8260	8081				Met①		TCLP RCRA				

MATRIX CODES:
W Water
WW Waste Water
GW Groundwater
WST Waste
WI Wipe
SO Solid
S Soil
SL Sludge
SE Sediment
PC Paint Chips
O Oil
NAL Non-Aqueous Liquid
L Leachate
A Air
T Tissue
F Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
01	T1NLKO	✓	✓	S	3-7-12	0934		X						X		X	X		

Special Instructions:

Met① = HSL + B, Mo, Si, Zr
(NOTL)

Special Instructions:

1. Leach and hold TCLP metals until directed to by client
2. 4-9-12 Metals Leachate OFF hold for analysis due 4-18-12 per Client.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	3/13/12	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-150-019	Page 1 of ~~2~~ 1

Collector J. Russell	**Company Contact** Joan Kessner **Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9L **Data Turnaround** 21 Days (3/7/12)
Project Designation 300 Area Field Remediation - Other	**Sampling Location** 300 - 264 [327 Bldg] - RPS Sump	**SAF No.** RC-150	
Ice Chest No. ERC-01-021 ~~N/A~~ 3-7-12 CMB	**Field Logbook No.** EL-1663-01 **COA** R302642600	**Method of Shipment** Fed Ex/Hand Deliver	
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE (3/7/12)	**Offsite Property No.** ~~N/A~~ 3-7-12 CMB ~~NA~~ AJ 3-12-12 A110276	**Bill of Lading/Air Bill No.** ~~N/A~~ 3-7-12 CMB See RSR OSPC AJ 3-12-12	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~Potential~~ Radioactive < DOT Limits
AJ 3-12-12

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	None	Cool 4C	None	None	None	None	None	None	None
Type of Container	G/P	aG	aG	G/P	G/P	G/P	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	120mL	60mL	500mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	See item (3) in Special Instructions.	Isotopic Uranium	Isotopic Plutonium	Americium-241	Strontium-89,90 -- Total Sr	Technetium-99	Plutonium-241

Sample No.	Matrix *	Sample Date	Sample Time										RCF
J1NLK0	OTHER	3/7/2012	0934	✓	✓	✓							32279

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	3/7/12 1555	DAVID BECKER [signature]	3/7/12 1555
DAVID BECKER [signature]	3/7/12 1700	[signature] Bingham	060712 3-7-12 1700
[signature] Bingham WCH	060712 3-12-12 1200	Fed Ex	
Fed Ex	3-13-12 0955	VICTOR HERNANDEZ	3-13-12 0955

SPECIAL INSTRUCTIONS
Please Note: For the samples designated for TCLP Metals Analysis - Leach and Hold until further direction is provided.

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV) {Mercury}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}
~~(3) Gamma Spec~~ (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Niobium-94, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, ~~Zinc-65~~} 3/7/12

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 AJ DATE 3-12-12

WCH-EE-011

000000021

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford

Project/SAF/SOW/Release #: RC-150

Date: 3/13/12

LvL Batch #: 1203045

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7981 5890 0137
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 2.7	°C	Cooler # ERC-01-021
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 _____