SAF-RC-150
300 Area D4 Waste Sites – Other
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 9/4/12
INITIAL/DATE

COMMENTS:

SDG K3959 SAF-RC-150

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

Sample Location/Waste Site: 300-15 (Process Sewer) Pipe Coupon

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
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August 7, 2012

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

Reference: **P.O. #S00W235A01**
Eberline Analytical S2-07-080-7742 SDG K3959

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 July 25, 2012. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Joseph Verville
Client Services Manager

NJV/

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K3959 was composed of one solid (other solid) sample designated under SAF No. RC-150 with a Project Designation of: 300 Area D4 Waste Sites - 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 August 2, 2012.

The sample consisted of 749 g of vitrified clay pipe and pipe liner material. Results are reported in pCi/g.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.5 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/Curium-243/244 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**	8/7/12 **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 K3959

SDG	7742
Contact	Joseph Verville

Client	Hanford
Contract	No. S00W235A01
Case no	SDG_K3959

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	RC-150
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	08/06/12

SDG 7742
Contact Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A01
Case no SDG_K3959

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 RC-150
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/06/12

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 K3959

SDG 7742
Contact Joseph Verville

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3959

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
S207080-01	J1PW65	300-15 [ProcSwr]Pipe Cpn	OTHER		RC-150	RC-150-025	07/23/12 14:40
S207080-02	Lab Control Sample		OTHER		RC-150		
S207080-03	Method Blank		OTHER		RC-150		
S207080-04	Duplicate (S207080-01)	300-15 [ProcSwr]Pipe Cpn	OTHER		RC-150		07/23/12 14:40
S207080-05	Lab Control Sample		OTHER		RC-150		
S207080-06	Method Blank		OTHER		RC-150		
S207080-07	Duplicate (S207080-01)	300-15 [ProcSwr]Pipe Cpn	OTHER		RC-150		07/23/12 14:40

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

QC SUMMARY

SDG 7742
Contact Joseph Verville

Client Hanford
Contract No. S00W235A01
Case no SDG K3959

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
7742	RC-150-025	J1PW65	OTHER	100.0	749 g		07/25/12	2	S207080-01	7742-001
		Method Blank	OTHER						S207080-03	7742-003
		Method Blank	OTHER						S207080-06	7742-006
		Lab Control Sample	OTHER						S207080-02	7742-002
		Lab Control Sample	OTHER						S207080-05	7742-005
		Duplicate (S207080-01)	OTHER	100.0	749 g		07/25/12	2	S207080-04	7742-004
		Duplicate (S207080-01)	OTHER	100.0	749 g		07/25/12	2	S207080-07	7742-007

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

SDG 7742
Contact Joseph Verville

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3959

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
PU	OTHER	Plutonium, Isotopic in Solids	7732-127	8.0	1			1	1	1/1		
TP	OTHER	Americium 241/Curium in Solids	7732-127	8.0	1			1	1	1/1		
U	OTHER	Uranium, Isotopic in Solids	7732-127	8.0	1			1	1	1/1		
Beta Counting												
SR	OTHER	Total Strontium in Solids	7732-127	10.4	1			1	1	1/1		
TC	OTHER	Technetium 99 in Solids	7732-127	13.2	1			1	1	1/1		
Gamma Spectroscopy												
GAM	OTHER	Gamma Scan	7732-127	7.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	OTHER	Carbon 14 in Solids	7732-127	10.0	1			1	1	1/1		
H	OTHER	Tritium in Solids	7732-127	10.0	1			1	1	1/1		
NI_L	OTHER	Nickel 63 in Solids	7732-127	11.2	1			1	1	1/1		
PU_L	OTHER	Plutonium 241 in Solids	7732-127	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 RC-150
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

SDG 7742
Contact Joseph Verville

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A01
Case no SDG K3959

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S207080-01	J1PW65			7742-001	C		07/26/12	08/01/12	BW	Carbon 14 in Solids
07/23/12	300-15 [ProcSwr]	Pipe Cpn	OTHER	7742-001	GAM		07/26/12	07/30/12	CSS	Gamma Scan
07/25/12	RC-150-025	RC-150		7742-001	H	A1	07/31/12	08/01/12	BW	Tritium in Solids
				7742-001	NI_L		07/29/12	08/01/12	BW	Nickel 63 in Solids
				7742-001	PU		07/30/12	08/01/12	BW	Plutonium, Isotopic in Solids
				7742-001	PU_L		07/31/12	08/01/12	BW	Plutonium 241 in Solids
				7742-001	SR		07/27/12	08/01/12	BW	Total Strontium in Solids
				7742-001	TC		07/31/12	08/01/12	BW	Technetium 99 in Solids
				7742-001	TP		07/30/12	08/01/12	BW	Americium 241/Curium in Solids
				7742-001	U		07/27/12	08/01/12	BW	Uranium, Isotopic in Solids
S207080-02	Lab Control Sample			7742-002	C		07/27/12	08/01/12	BW	Carbon 14 in Solids
			OTHER	7742-002	GAM		07/26/12	07/30/12	CSS	Gamma Scan
		RC-150		7742-002	NI_L		07/29/12	08/01/12	BW	Nickel 63 in Solids
				7742-002	PU		07/30/12	08/01/12	BW	Plutonium, Isotopic in Solids
				7742-002	PU_L		07/31/12	08/01/12	BW	Plutonium 241 in Solids
				7742-002	SR		07/27/12	08/01/12	BW	Total Strontium in Solids
				7742-002	TC		07/30/12	08/01/12	BW	Technetium 99 in Solids
				7742-002	TP		07/30/12	08/01/12	BW	Americium 241/Curium in Solids
				7742-002	U		07/27/12	08/01/12	BW	Uranium, Isotopic in Solids
S207080-03	Method Blank			7742-003	C		07/26/12	08/01/12	BW	Carbon 14 in Solids
			OTHER	7742-003	GAM		07/26/12	07/30/12	CSS	Gamma Scan
		RC-150		7742-003	NI_L		07/29/12	08/01/12	BW	Nickel 63 in Solids
				7742-003	PU		07/30/12	08/01/12	BW	Plutonium, Isotopic in Solids
				7742-003	PU_L		07/31/12	08/01/12	BW	Plutonium 241 in Solids
				7742-003	SR		07/27/12	08/01/12	BW	Total Strontium in Solids
				7742-003	TC		07/31/12	08/01/12	BW	Technetium 99 in Solids
				7742-003	TP		07/30/12	08/01/12	BW	Americium 241/Curium in Solids
				7742-003	U		07/27/12	08/01/12	BW	Uranium, Isotopic in Solids

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

SDG 7742
Contact Joseph Verville

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A01
Case no SDG K3959

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S207080-04	Duplicate (S207080-01)			7742-004	C		07/26/12	08/01/12	BW	Carbon 14 in Solids
07/23/12	300-15 [ProcSwr]	Pipe Cpn	OTHER	7742-004	GAM		07/26/12	07/30/12	CSS	Gamma Scan
07/25/12		RC-150		7742-004	NI_L		07/29/12	08/01/12	BW	Nickel 63 in Solids
				7742-004	PU		07/30/12	08/01/12	BW	Plutonium, Isotopic in Solids
				7742-004	PU_L		07/31/12	08/01/12	BW	Plutonium 241 in Solids
				7742-004	SR		07/27/12	08/01/12	BW	Total Strontium in Solids
				7742-004	TC		07/31/12	08/01/12	BW	Technetium 99 in Solids
				7742-004	TP		07/30/12	08/01/12	BW	Americium 241/Curium in Solids
				7742-004	U		07/27/12	08/01/12	BW	Uranium, Isotopic in Solids
S207080-05	Lab Control Sample		OTHER	7742-005	H		08/01/12	08/01/12	BW	Tritium in Solids
		RC-150								
S207080-06	Method Blank		OTHER	7742-006	H		07/31/12	08/01/12	BW	Tritium in Solids
		RC-150								
S207080-07	Duplicate (S207080-01)			7742-007	H		07/31/12	08/01/12	BW	Tritium in Solids
07/23/12	300-15 [ProcSwr]	Pipe Cpn	OTHER							
07/25/12		RC-150								

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

SDG 7742
Contact Joseph Verville

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A01
Case no SDG K3959

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	RC-150	Carbon 14 in Solids	C14_COX_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
TP	RC-150	Americium 241/Curium in Solids	AMCMISO_IE_PLATE_AEA	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 RC-150
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-003 Method Blank

METHOD BLANK

SDG	7742	Client/Case no	Hanford	SDG_K3959	
Contact	Joseph Verville	Contract	No. S00W235A01		
Lab sample id	S207080-03	Client sample id	Method Blank		
Dept sample id	7742-003	Material/Matrix		OTHER	
		SAF No	RC-150		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	-0.134	0.54	0.901	50.0	U	C
Nickel 63	13981-37-8	0.037	1.7	2.89	30.0	U	NI_L
Total Strontium	SR-RAD	-0.042	0.15	0.310	1.00	U	SR
Americium 241	14596-10-2	-0.007	0.034	0.080	1.00	U	TP
Curium 242	15510-73-3	0.013	0.020	0.037	1.00	U	TP
Curium 243/244	CM-243/244	-0.017	0.027	0.064	1.00	U	TP
Technetium 99	14133-76-7	0.076	0.13	0.294	15.0	U	TC
Uranium 233/234	U-233/234	0	0.010	0.031	1.00	U	U
Uranium 235	15117-96-1	0	0.006	0.024	1.00	U	U
Uranium 238	U-238	-0.003	0.005	0.024	1.00	U	U
Plutonium 238	13981-16-3	-0.006	0.050	0.110	1.00	U	PU
Plutonium 239/240	PU-239/240	0.031	0.037	0.048	1.00	U	PU
Plutonium 241	14119-32-5	-0.529	12	19.8	15.0	U	PU_L
Potassium 40	13966-00-2	U		0.131		U	GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Zinc 65	13982-39-3	U		0.021		U	GAM
Niobium 94	14681-63-1	U		0.009		U	GAM
Ruthenium 106	13967-48-1	U		0.085		U	GAM
Antimony 125	14234-35-6	U		0.019		U	GAM
Cesium 134	13967-70-9	U		0.011		U	GAM
Cesium 137	10045-97-3	U		0.008	0.100	U	GAM
Cerium 144	14762-78-8	U		0.038		U	GAM
Europium 152	14683-23-9	U		0.025	0.100	U	GAM
Europium 154	15585-10-1	U		0.022	0.100	U	GAM
Europium 155	14391-16-3	U		0.023	0.100	U	GAM
Radium 226	13982-63-3	U		0.019	0.100	U	GAM
Radium 228	15262-20-1	U		0.038	0.200	U	GAM
Thorium 228	14274-82-9	U		0.013		U	GAM
Thorium 232	TH-232	U		0.038		U	GAM

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-003 Method Blank

BLANK, cont.

SDG	7742	Client/Case no	Hanford	SDG_K3959
Contact	Joseph Verville	Contract	No. S00W235A01	
Lab sample id	S207080-03	Client sample id	Method Blank	
Dept sample id	7742-003	Material/Matrix		OTHER
		SAF No	RC-150	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 235	15117-96-1	U		0.048	0.300	U	GAM
Uranium 238	U-238	U		1.24	10.0	U	GAM
Americium 241	14596-10-2	U		0.030	0.300	U	GAM

QC-BLANK #82204

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-006 Method Blank

METHOD BLANK

SDG	7742	Client/Case no	Hanford	SDG_K3959
Contact	Joseph Verville	Contract	No. S00W235A01	
Lab sample id	S207080-06	Client sample id	Method Blank	
Dept sample id	7742-006	Material/Matrix		OTHER
		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	-0.998	1.6	2.88	400	U	H

QC-BLANK #82258

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-002 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7742
Contact Joseph Verville

Client/Case no Hanford SDG K3959
Contract No. S00W235A01

Lab sample id S207080-02
Dept sample id 7742-002

Client sample id Lab Control Sample
Material/Matrix OTHER
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
Carbon 14	1040	21	5.00	50.0		C	1040	42	100	84-116	80-120
Nickel 63	187	5.5	2.86	30.0		NI_L	214	8.6	87	84-116	80-120
Total Strontium	9.14	0.52	0.220	1.00		SR	9.29	0.37	98	82-118	80-120
Americium 241	10.8	0.44	0.071	1.00		TP	10.1	0.40	107	84-116	80-120
Curium 243/244	9.15	0.39	0.059	1.00		TP	8.74	0.35	105	85-115	80-120
Technetium 99	130	2.5	0.429	15.0		TC	120	4.8	108	78-122	80-120
Uranium 233/234	12.0	0.46	0.071	1.00		U	11.8	0.47	102	85-115	80-120
Uranium 238	11.5	0.44	0.064	1.00		U	11.8	0.47	97	86-114	80-120
Plutonium 238	12.8	0.62	0.098	1.00		PU	13.6	0.54	94	86-114	80-120
Plutonium 239/240	15.3	0.70	0.061	1.00		PU	15.8	0.63	97	85-115	80-120
Plutonium 241	265	17	20.5	15.0		PU_L	298	12	89	80-120	80-120
Cobalt 60	0.368	0.029	0.019	0.050		GAM	0.406	0.016	91	84-116	80-120
Cesium 137	0.436	0.025	0.016	0.100		GAM	0.472	0.019	92	86-114	80-120

QC-LCS #82203

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7742
Contact Joseph Verville

Client/Case no Hanford SDG K3959
Contract No. S00W235A01

Lab sample id S207080-05
Dept sample id 7742-005

Client sample id Lab Control Sample
Material/Matrix OTHER
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	334	8.2	2.83	400		H	319	13	105	83-117	80-120

QC-LCS #82257

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-004 J1PW65

DUPLICATE

SDG	7742			Client/Case no	Hanford SDG K3959
Contact	Joseph Verville			Contract	No. S00W235A01
	DUPLICATE		ORIGINAL		
Lab sample id	S207080-04	Lab sample id	S207080-01	Client sample id	J1PW65
Dept sample id	7742-004	Dept sample id	7742-001	Location/Matrix	300-15 [ProcSwr] Pipe Cpn OTHER
		Received	07/25/12	Collected/Weight	07/23/12 14:40 749 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-150-025 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
Carbon 14	3.32	0.54	0.829	50.0		C	3.64	0.58	0.880		9	40	0.7
Nickel 63	-0.725	1.7	2.98	30.0	U	NI_L	-0.227	1.7	2.96	U	-		0.4
Total Strontium	-0.087	0.15	0.344	1.00	U	SR	-0.049	0.12	0.256	U	-		0.4
Americium 241	0.016	0.038	0.075	1.00	U	TP	0.046	0.030	0.056	U	-		1.2
Curium 242	0.003	0.013	0.032	1.00	U	TP	0.013	0.010	0.020	U	-		1.2
Curium 243/244	0.013	0.026	0.052	1.00	U	TP	-0.003	0.020	0.045	U	-		1.0
Technetium 99	-0.023	0.16	0.303	15.0	U	TC	-0.030	0.14	0.301	U	-		0.1
Uranium 233/234	0.770	0.093	0.045	1.00		U	0.723	0.086	0.034		6	31	0.6
Uranium 235	0.067	0.031	0.029	1.00		U	0.054	0.023	0.022		21	97	0.7
Uranium 238	0.825	0.093	0.034	1.00		U	0.753	0.086	0.029		9	29	0.9
Plutonium 238	0.045	0.038	0.049	1.00	U	PU	0.030	0.060	0.105	U	-		0.4
Plutonium 239/240	0.026	0.026	0.049	1.00	U	PU	0.036	0.036	0.046	U	-		0.4
Plutonium 241	-2.53	9.3	15.8	15.0	U	PU_L	-0.343	7.6	12.8	U	-		0.4
Potassium 40	8.25	0.20	0.108			GAM	7.80	0.68	0.452		6	20	0.8
Cobalt 60	U		0.009	0.050	U	GAM	U		0.038	U	-		1.5
Zinc 65	U		0.018		U	GAM	U		0.102	U	-		1.6
Niobium 94	U		0.008		U	GAM	U		0.033	U	-		1.5
Ruthenium 106	U		0.080		U	GAM	U		0.312	U	-		1.4
Antimony 125	U		0.024		U	GAM	U		0.096	U	-		1.5
Cesium 134	U		0.015		U	GAM	U		0.048	U	-		1.3
Cesium 137	0.107	0.009	0.009	0.100		GAM	0.106	0.040	0.046		1	60	0
Cerium 144	U		0.057		U	GAM	U		0.233	U	-		1.5
Europium 152	U		0.030	0.100	U	GAM	U		0.113	U	-		1.4
Europium 154	U		0.028	0.100	U	GAM	U		0.121	U	-		1.5
Europium 155	U		0.051	0.100	U	GAM	U		0.142	U	-		1.2
Radium 226	1.01	0.026	0.019	0.100		GAM	0.998	0.097	0.084		1	21	0.2
Radium 228	1.12	0.050	0.043	0.200		GAM	1.14	0.19	0.166		2	30	0.2
Thorium 228	1.10	0.025	0.013			GAM	1.20	0.066	0.064		9	18	1.5

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-004 J1PW65

DUPLICATE, cont.

SDG	7742			Client/Case no	Hanford SDG K3959
Contact	Joseph Verville			Contract	No. S00W235A01
	DUPLICATE		ORIGINAL		
Lab sample id	S207080-04	Lab sample id	S207080-01	Client sample id	J1PW65
Dept sample id	7742-004	Dept sample id	7742-001	Location/Matrix	300-15 [ProcSwr] Pipe Cpn OTHER
		Received	07/25/12	Collected/Weight	07/23/12 14:40 749 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-150-025 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
Thorium 232	1.12	0.050	0.043			GAM	1.14	0.19	0.166		2	30	0.2
Uranium 235	U		0.111	0.300	U	GAM	U		0.268	U	-		1.1
Uranium 238	U		2.16	10.0	U	GAM	U		4.39	U	-		0.9
Americium 241	U		0.022	0.300	U	GAM	U		0.398	U	-		1.9

QC-DUP#1 82205

300 Area D4 Waste Sites - Other

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-007 J1PW65

DUPLICATE

SDG	7742			Client/Case no	Hanford SDG K3959
Contact	Joseph Verville			Contract	No. S00W235A01
	DUPLICATE		ORIGINAL		
Lab sample id	S207080-07	Lab sample id	S207080-01	Client sample id	J1PW65
Dept sample id	7742-007	Dept sample id	7742-001	Location/Matrix	300-15 [ProcSwr] Pipe Cpn OTHER
		Received	07/25/12	Collected/Weight	07/23/12 14:40 749 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-150-025 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	-0.888	3.1	5.38	400	U	H	0.614	3.1	5.31	U	-		0.7

QC-DUP#1 82259

300 Area D4 Waste Sites - Other

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

7742-001 J1PW65

DATA SHEET

SDG	7742	Client/Case no	Hanford SDG_K3959
Contact	Joseph Verville	Contract	No. S00W235A01
Lab sample id	S207080-01	Client sample id	J1PW65
Dept sample id	7742-001	Location/Matrix	300-15 [ProcSwr] Pipe Cpn OTHER
Received	07/25/12	Collected/Weight	07/23/12 14:40 749 g
% solids	100.0	Custody/SAF No	RC-150-025 RC-150

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.614	3.1	5.31	400	U	H
Carbon 14	14762-75-5	3.64	0.58	0.880	50.0		C
Nickel 63	13981-37-8	-0.227	1.7	2.96	30.0	U	NI_L
Total Strontium	SR-RAD	-0.049	0.12	0.256	1.00	U	SR
Americium 241	14596-10-2	0.046	0.030	0.056	1.00	U	TP
Curium 242	15510-73-3	0.013	0.010	0.020	1.00	U	TP
Curium 243/244	CM-243/244	-0.003	0.020	0.045	1.00	U	TP
Technetium 99	14133-76-7	-0.030	0.14	0.301	15.0	U	TC
Uranium 233/234	U-233/234	0.723	0.086	0.034	1.00		U
Uranium 235	15117-96-1	0.054	0.023	0.022	1.00		U
Uranium 238	U-238	0.753	0.086	0.029	1.00		U
Plutonium 238	13981-16-3	0.030	0.060	0.105	1.00	U	PU
Plutonium 239/240	PU-239/240	0.036	0.036	0.046	1.00	U	PU
Plutonium 241	14119-32-5	-0.343	7.6	12.8	15.0	U	PU_L
Potassium 40	13966-00-2	7.80	0.68	0.452			GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Zinc 65	13982-39-3	U		0.102		U	GAM
Niobium 94	14681-63-1	U		0.033		U	GAM
Ruthenium 106	13967-48-1	U		0.312		U	GAM
Antimony 125	14234-35-6	U		0.096		U	GAM
Cesium 134	13967-70-9	U		0.048		U	GAM
Cesium 137	10045-97-3	0.106	0.040	0.046	0.100		GAM
Cerium 144	14762-78-8	U		0.233		U	GAM
Europium 152	14683-23-9	U		0.113	0.100	U	GAM
Europium 154	15585-10-1	U		0.121	0.100	U	GAM
Europium 155	14391-16-3	U		0.142	0.100	U	GAM
Radium 226	13982-63-3	0.998	0.097	0.084	0.100		GAM
Radium 228	15262-20-1	1.14	0.19	0.166	0.200		GAM

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/12

DATA SHEET, cont

SDG	7742	Client/Case no	Hanford SDG_K3959
Contact	Joseph Verville	Contract	No. S00W235A01
Lab sample id	S207080-01	Client sample id	J1PW65
Dept sample id	7742-001	Location/Matrix	300-15 [ProcSwr] Pipe Cpn OTHER
Received	07/25/12	Collected/Weight	07/23/12 14:40 749 g
% solids	100.0	Custody/SAF No	RC-150-025 RC-150

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	1.20	0.066	0.064			GAM
Thorium 232	TH-232	1.14	0.19	0.166			GAM
Uranium 235	15117-96-1	U		0.268	0.300	U	GAM
Uranium 238	U-238	U		4.39	10.0	U	GAM
Americium 241	14596-10-2	U		0.398	0.300	U	GAM

300 Area D4 Waste Sites - Other

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test PU Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7732-127						
S207080-01			7742-001	J1PW65	U	U
S207080-02			7742-002	Lab Control Sample	ok	ok
S207080-03			7742-003	Method Blank	U	U
S207080-04			7742-004	Duplicate (S207080-01)	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7732-127 2σ prep error 8.0 % Reference Lab Notebook No. 7732 pg.127																
S207080-01			J1PW65	0.105	0.500			40		1049			7	07/30/12	07/30	SS-009
S207080-02			Lab Control Sample	0.098	0.500			39		1050				07/30/12	07/30	SS-011
S207080-03			Method Blank	0.110	0.500			38		1033				07/30/12	07/30	SS-063
S207080-04			Duplicate (S207080-01)	0.049	0.500			34		1033			7	07/30/12	07/30	SS-065
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 FOR 4 SAMPLES
MDA 0.090 ± 0.056
YIELD 38 ± 5

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test TP Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241	Curium 243/244
Preparation batch 7732-127						
S207080-01			7742-001	J1PW65	U	U
S207080-02			7742-002	Lab Control Sample	ok	ok
S207080-03			7742-003	Method Blank	U	U
S207080-04			7742-004	Duplicate (S207080-01)	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7732-127			2σ prep error 8.0 %	Reference Lab Notebook No. 7732 pg.127												
S207080-01			J1PW65	0.056	0.500			90		990			7	07/30/12	07/30	SS-030
S207080-02			Lab Control Sample	0.071	0.500			95		1003				07/30/12	07/30	SS-036
S207080-03			Method Blank	0.080	0.500			84		1004				07/30/12	07/30	SS-037
S207080-04			Duplicate (S207080-01)	0.075	0.500			92		1004			7	07/30/12	07/30	SS-038
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.070 ± 0.021
YIELD 90 ± 9

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test U	Matrix OTHER
SDG 7742	
Contact Joseph Verville	

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. S00W235A01	
Contract SDG K3959	

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 7732-127											
S207080-01			7742-001	J1PW65	0.723	0.054	0.753	96	16	7	3
S207080-02			7742-002	Lab Control Sample	ok		ok				
S207080-03			7742-003	Method Blank	U	U	U				
S207080-04			7742-004	Duplicate (S207080-01)	ok	ok	ok	93	15	8	4
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
							Averages	95		8	

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 7732-127 2σ prep error 8.0 % Reference Lab Notebook No. 7732 pg.127																
S207080-01			J1PW65	0.034	0.500			95		1039			4	07/27/12	07/27	SS-055
S207080-02			Lab Control Sample	0.071	0.500			93		1039				07/27/12	07/27	SS-057
S207080-03			Method Blank	0.031	0.500			87		1039				07/27/12	07/27	SS-058
S207080-04			Duplicate (S207080-01)	0.045	0.500			93		1055			4	07/27/12	07/27	SS-062
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	MDA	0.045	± 0.036
FOR 4 SAMPLES	YIELD	92	± 7

Lab id	EBRLNE
Protocol	RC-150
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test SR Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7732-127					
S207080-01			7742-001	J1PW65	U
S207080-02			7742-002	Lab Control Sample	ok
S207080-03			7742-003	Method Blank	U
S207080-04			7742-004	Duplicate (S207080-01)	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7732-127 2σ prep error 10.4 % Reference Lab Notebook No. 7732 pg.127																
S207080-01			J1PW65	0.256	1.00			83		100			4	07/27/12	07/27	GRB-229
S207080-02			Lab Control Sample	0.220	1.00			93		100				07/27/12	07/27	GRB-230
S207080-03			Method Blank	0.310	1.00			95		100				07/27/12	07/27	GRB-231
S207080-04			Duplicate (S207080-01)	0.344	1.00			77		100			4	07/27/12	07/27	GRB-232
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 0.282 ± 0.110
FOR 4 SAMPLES YIELD 87 ± 17

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test TC Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99	
Preparation batch 7732-127						
S207080-01			7742-001	J1PW65	U	
S207080-02			7742-002	Lab Control Sample	ok	
S207080-03			7742-003	Method Blank	U	
S207080-04			7742-004	Duplicate (S207080-01)	-	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 7732-127			2σ prep error 13.2 % Reference Lab Notebook No. 7732 pg.127													
S207080-01			J1PW65	0.301	1.00			88		200			8	07/27/12	07/31	GRB-225
S207080-02			Lab Control Sample	0.429	1.00			84		100				07/27/12	07/30	GRB-232
S207080-03			Method Blank	0.294	1.00			87		200				07/27/12	07/31	GRB-227
S207080-04			Duplicate (S207080-01)	0.303	1.00			56		400			8	07/27/12	07/31	GRB-232
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	MDA 0.332 ± 0.130
FOR 4 SAMPLES	YIELD 79 ± 31

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test GAM Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 7732-127						
S207080-01			7742-001	J1PW65	U	0.106
S207080-02			7742-002	Lab Control Sample	ok	ok
S207080-03			7742-003	Method Blank	U	U
S207080-04			7742-004	Duplicate (S207080-01)	- U	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 7732-127			2σ prep error 7.0 %	Reference Lab Notebook No. 7732 pg.127												
S207080-01			J1PW65	0.038	515					207			3	07/26/12	07/26	MB,05,00
S207080-02			Lab Control Sample	0.019	515					214				07/26/12	07/26	01,03,00
S207080-03			Method Blank	0.010	515					214				07/26/12	07/26	01,04,00
S207080-04			Duplicate (S207080-01)	0.009	515					959			3	07/26/12	07/26	MB,06,00
Nominal values and limits from method				0.050	650					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.019 ± 0.027
YIELD ____ ± ____

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/06/12

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test C Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7732-127					
S207080-01			7742-001	J1PW65	3.64
S207080-02			7742-002	Lab Control Sample	ok
S207080-03			7742-003	Method Blank	U
S207080-04			7742-004	Duplicate (S207080-01)	ok
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 7732-127			2σ prep error 10.0 % Reference Lab Notebook No. 7732 pg.127													
S207080-01			J1PW65	0.880	0.611			100		290			3	07/26/12	07/26	LSC-004
S207080-02			Lab Control Sample	5.00	0.611			100		10				07/26/12	07/27	LSC-004
S207080-03			Method Blank	0.901	0.611			100		290				07/26/12	07/26	LSC-004
S207080-04			Duplicate (S207080-01)	0.829	0.609			100		290			3	07/26/12	07/26	LSC-004
Nominal values and limits from method				50.0	0.611					10			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 1.90 ± 4.13
YIELD 100 ± 0

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
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EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test H Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium
Preparation batch 7732-127					
S207080-01		A1	7742-001	J1PW65	U
S207080-05			7742-005	Lab Control Sample	ok
S207080-06			7742-006	Method Blank	U
S207080-07			7742-007	Duplicate (S207080-01)	- U
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 7732-127			2σ prep error 10.0 % Reference Lab Notebook No. 7732 pg.127													
S207080-01		A1	J1PW65	5.31	0.328			100		50			8	07/31/12	07/31	LSC-004
S207080-05			Lab Control Sample	2.83	0.611			100		50				07/31/12	08/01	LSC-004
S207080-06			Method Blank	2.88	0.611			100		50				07/31/12	07/31	LSC-004
S207080-07			Duplicate (S207080-01)	5.38	0.328			100		50			8	07/31/12	07/31	LSC-004
Nominal values and limits from method				400	0.611					25			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 4.10 ± 2.88
YIELD 100 ± 0

Lab id EBRLNE
Protocol RC-150
Version Ver 1.0
Form DVD-LMS
Version 3.06
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EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test NI L Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7732-127						
S207080-01			7742-001	J1PW65	U	
S207080-02			7742-002	Lab Control Sample	ok	
S207080-03			7742-003	Method Blank	U	
S207080-04			7742-004	Duplicate (S207080-01)	-	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 7732-127			2σ prep error 11.2 %	Reference Lab Notebook No. 7732 pg.127												
S207080-01			J1PW65	2.96	0.500			98		50			6	07/29/12	07/29	LSC-004
S207080-02			Lab Control Sample	2.86	0.500			100		50				07/29/12	07/29	LSC-004
S207080-03			Method Blank	2.89	0.500			99		50				07/29/12	07/29	LSC-004
S207080-04			Duplicate (S207080-01)	2.98	0.500			96		50			6	07/29/12	07/29	LSC-004
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 2.92 ± 0.114
YIELD 98 ± 3

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EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP K3959

Test PU L Matrix OTHER
SDG 7742
Contact Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM 241 IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A01
Contract SDG K3959

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 241	
Preparation batch 7732-127						
S207080-01			7742-001	J1PW65	U	
S207080-02			7742-002	Lab Control Sample	ok	
S207080-03			7742-003	Method Blank	U	
S207080-04			7742-004	Duplicate (S207080-01)	-	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 7732-127			2σ prep error 12.4 % Reference Lab Notebook No. 7732 pg.127													
S207080-01			J1PW65	12.8	0.500			40		100			8	07/30/12	07/31	LSC-007
S207080-02			Lab Control Sample	20.5	0.500			25		100				07/30/12	07/31	LSC-007
S207080-03			Method Blank	19.8	0.500			26		100				07/30/12	07/31	LSC-007
S207080-04			Duplicate (S207080-01)	15.8	0.500			33		100			8	07/30/12	07/31	LSC-007
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	17.2	±	7.21
	YIELD	31	±	14

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REPORT GUIDE

Client Hanford
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SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Contact Joseph Verville

REPORT GUIDE

Client Hanford
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Case no SDG K3959

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.

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GUIDE, cont.

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DATA SHEET

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

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

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

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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

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

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

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

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

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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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MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

* 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-150-025	Page 2 of 2

Collector M. Simonds	Company Contact Joan Kessner	Telephone No. 509-375-4688 (7742)	Project Coordinator KESSNER, JH
Price Code 9L	Data Turnaround 21 Days		
Project Designation 300 Area D4 Waste Sites - Other	Sampling Location 300 - 15 [Process Sewer] Pipe Coupon K3959		SAF No. RC-150
Ice Chest No. ~~N/A~~ AJ 7-24-12 WCH-11-055	Field Logbook No. EL-1663-~~02~~ 03 7/23/12	COA R300152600	Method of Shipment Fed Ex/Hand Deliver
Shipped To EBERLINE SERVICES ~~LIONVILLE~~ 7/23/12	Offsite Property No. ~~N/A~~ AJ 7-24-12 A110442		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive < DOT Limits AJ 7-24-12

Special Handling and/or Storage

AJ 7-24-12 ~~Cool 4C~~ NONE 7/23/12

* ONE 1-L POLY CONTAINER IS PROVIDED & INTENDED TO SUPPLY ENOUGH MATERIAL FOR ALL SAMPLE ANALYSIS REQUESTED.

Preservation	None	None	None	None	None	None	None
Type of Container	G/P AJ 7-24-12	G/P	G/P	G/P	G/P	G/P	G/P
*No. of Container(s)	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0
Volume	60mL	60mL	60mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Strontium-89,90 -- Total Sr (RCF 34018)	Technetium-99	Plutonium-241	Carbon-14 Low Level	Nickel-63	Tritium - H3	RCF GEA Shipping Screen
J1PW65	OTHER	7/23/12	1440	✓	✓	✓	✓	✓	✓	
~~J1PW66~~ 7/23/12	OTHER									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From MIRANDA SIMONDS		7/23/12 1615	DAVID BECKER	7/23/12 1615
Relinquished By/Removed From DAVID BECKER		7/23/12 1645	Received By/Stored In 1060, 2A *	7/23/12 1645
Relinquished By/Removed From 1060 #2 7-24-12 0610	A. Freier	7-24-12 0610	Received By/Stored In A. Freier	7-24-12 0610
Relinquished By/Removed From A. Freier 7-24-12	WCH	1310	Received By/Stored In Fed Ex	
Relinquished By/Removed From FED EX			Received By/Stored In F. HATTRUPMAN	07/25/12 0932
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS 7/23/12

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

PIPE COUPON SAMPLE CONSISTS OF VITRIFIED CLAY PIPE & PIPE LINER MATERIAL FROM PIPE INTERIOR; ANALYZE & REPORT RESULTS AS SINGLE UNIT. 7/23/12

*

Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

REVIEWED BY KN DATE 7/24/12

Matrix *

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

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-150-025	Page 1 of 2

Collector M. Simonds	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code 9L	Data Turnaround ~~21~~ 7 Days 7/25/12		
Project Designation 300 Area D4 Waste Sites - Other	Sampling Location 300 - 15 [Process Sewer] Pipe Coupon		SAF No. RC-150
Ice Chest No. ~~N/A~~ AJ 7-24-12 WCH-11-055	Field Logbook No. EL-1663-~~02~~ 03 RJB 7/23/12	COA R300152600	Method of Shipment Fed Ex/Hand Deliver
Shipped To EBERLINE SERVICES ~~LIONVILLE~~ RJB 7/23/12	Offsite Property No. ~~N/A~~ AJ 7-24-12 A110442		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive L DOT Limits AJ 7-24-12

Special Handling and/or Storage

AJ 7-24-12 ~~Cool 4C~~ NONE

RJB 7/23/12

* ONE 1-L POLY CONTAINER IS PROVIDED & INTENDED TO SUPPLY ENOUGH MATERIAL FOR ALL SAMPLE ANALYSIS REQUESTED.

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	None
Type of Container	G/P	aG	G	aG	aG	aG	G/P	G/P AJ 7-24-12	G/P	G/P
*No. of Container(s)	1	1	1	1	1	1	1 AJ 7-24-12	~~1~~ 0	~~1~~ 0	~~1~~ 0
Volume	60mL	120mL	60mL RJB 7/23/12	60mL	60mL	125mL	~~500mL~~ 1000 ml	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions. RCF	VOA - 8260A (TCL) 34018	Semi-VOA - 8270A (TCL)	PCBs - 8082	PAHs - 8310	See item (3) in Special Instructions.	Isotopic Uranium	Isotopic Plutonium	Americium-241/Curium-244

Sample No.	Matrix *	Sample Date	Sample Time									
J1PW65	OTHER	7/23/12	1440							✓	✓	✓	✓
~~J1PW66~~ 7/23/12	RJB OTHER											

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MIRANDA SIMONDS	7/23/12 1615	DAVID BECKER	7/23/12 1615
DAVID BECKER	7/23/12 1645	1060, 2A *	7/23/12 1645
1060#2 A. Freier	7-24-12 0610	A. Freier	7-24-12 0610
WCH A. Freier	7-24-12 1310	Fed Ex	
Fed Ex		[illegible]	7/25/12 0930

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, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Uranium, 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}

PIPE COUPON SAMPLE CONSISTS OF VITRIFIED CLAY PIPE & PIPE LINER MATERIAL FROM PIPE INTERIOR; ANALYZE & REPORT RESULTS AS SINGLE UNIT. RJB 7/23/12

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 KNS DATE 7/26/12

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

* Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

WCH-EE-011

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City RICHLAND State WA

Date/Time received 07/25/12 0930 CoC No. RC-150-025

Container I.D. No. WCH-11-055 Requested TAT (Days) ~~21~~ 1 DAY 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 SOIL
7. Number of containers per sample: 1 (Or see CoC _____)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [X] Appropriate sample labels [X]
11. Samples are: In good condition [ ] 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: 07/25/12 Time: 1130

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J1PW65	<80						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100482 Calibration date 06 DEC 11

"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

16 August 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 #	1207054
SDG #	K3959
SAF #	RC-150
Date Received	07/25/12
# Samples	1
Matrix	SOLID
Volatiles	X
Semivolatiles	X
Pest/PCB	X
Glycols	
DRO/KRO/GRO	
PAHs	X
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

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 92 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only: 1207054

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: W.C. Hanford SAF# RC-150
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: Arlette Johnson
QC: SW Del: Std TAT: 21 days
Date Rec'd: 7-25-12 Date Due: 8-15-12

		A													
Refrigerator #		1													
#/Type Container	Liquid														
	Solid	1pl													
Volume	Liquid														
	Solid	1L													
Preservatives		1													
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	~~Pest~~/PCB	Herb	PAHs 8310			(1) Metal + HS	CN	(2) TCLP Metals + HS				
		Lionville Laboratory Use Only													
		8260	8270	8082		8310			6010 Met/Hg		TCLP Met/Hg				

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	VOA	BNA	Pest/PCB	Herb	PAHs			Metal	CN	TCLP				
01	JIPW65	✓	✓	SO	7-23-12	1440	X	X	X		X			X		X				

Special Instructions:
(1) Met = HSL + B, Li, Mo, Si, U, Zr (no TL)

Per Client Matrix consists of clay pipe + liner material single + report as single unit

Special Instructions:
1. 7/25/12 ~~10:~~ TCLP Metals Analysis - Leach and Hold until further
2. directions are provided.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	7-25-12	10:10

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-150-025	Page 1 of ~~2~~ 1

Collector M. Simonds	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code 9L	Data Turnaround 21 Days		
Project Designation 300 Area D4 Waste Sites - Other	Sampling Location 300 - 15 [Process Sewer] Pipe Coupon		SAF No. RC-150
Ice Chest No. ~~N/A~~ AJ 7-24-12 WCH-11-026	Field Logbook No. EL-1663-~~02~~03 KJB 7/23/12	COA R300152600	Method of Shipment Fed Ex/Hand Deliver
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE KJB 7/23/12	Offsite Property No. ~~N/A~~ AJ 7-24-12 A110471		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive

Special Handling and/or Storage

Cool 4C
KJB 7/23/12
* ONE 1-L POLY CONTAINER IS PROVIDED & INTENDED TO SUPPLY ENOUGH MATERIAL FOR ALL SAMPLE ANALYSIS REQUESTED.

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	None
Type of Container	G/P	aG AJ 7-24-12	G	aG	aG	aG	G/P	G/P	G/P	G/P
No. of Container(s)	1	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	1	1	1	1
Volume	~~60mL~~ 1000 ml	AJ 7-24-12 120mL	60mL	60mL	60mL	125mL	500mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	PCBs - 8082	PAHs - 8310	See item (3) in Special Instructions.	Isotopic Uranium	Isotopic Plutonium	Americium-241/Curium-244

Sample No.	Matrix *	Sample Date	Sample Time										
										RCF			
J1PW65	OTHER	7/23/12	1440	✓	✓	✓	✓	✓	✓	34018			
~~J1PW66~~	~~OTHER~~	AJ 7-24-12											

REVIEWED BY KW DATE 7/24/12

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MIRANDA SILVA DOS	7/23/12 1615	DAVID BECKER	7/23/12 1615
DAVID BECKER	7/23/12 1645	1060, 2A *	7/23/12 1645
1060#2 7-24-12 0610	A. Freier	A. Freier 7-24-12	0610
A. Freier 7-24-12	WCH 1310	Fed Ex	
Fed Ex	7-25-12 10:10		7-25-12 10:10

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, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Uranium, 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}~~ KJB 7/23/12

PIPE COUPON SAMPLE CONSISTS OF VITRIFIED CLAY PIPE & PIPE LINER MATERIAL FROM PIPE INTERIOR; ANALYZE & REPORT RESULTS AS SINGLE UNIT. KJB 7/23/12

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		Date/Time

* Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

WCH-EE-011

00000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford
Project/SAF/SOW/Release #: RC-150

Date: 7-25-12

LvL Batch #: 1207054

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7938 2660 2155
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 5.3	°C	Cooler # WCH-11-026
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 _____

SR-002-B.doc

VOLATILES

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: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

Analytical Report for Volatile Organic Compounds by SW846 8260B

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PW65	1207054-01	Other Solid	07/23/2012 14:40	07/25/2012 10:10

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 K3959
LVL #: 1207054

W.O. #: 60049-001-001-0001-00
Date Received: 07-25-2012

GC/MS VOLATILE

One (1) other solid sample was collected 07-23-2012.

The sample and associated QC samples were prepared and analyzed 07-27-2012 according to criteria set forth in Lionville Laboratory SOPs. The preparation procedure was based on SW846 Method 5030A, Rev. 1, July 1992 and the analysis procedure was based on SW846 Method 8260B for TCL Volatile 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. Only one (1) sample vial was received for sample J1PW65. The vial was opened in the extraction lab prior to VOA analysis, which could possibly have affected the results. A copy of the Sample Discrepancy Report (SDR#12VT012) has been enclosed.

3. The sample was analyzed within hold time.

4. Non-target compounds were not detected in this sample.

5. All obtainable surrogate recoveries were within acceptance criteria.

6. Two (2) of seventy (70) matrix spike recoveries were outside QC acceptance criteria. The out of range recoveries for Styrene are due to the high concentration found in the non-spiked sample.

7. All blank spike recoveries were within acceptance criteria.

8. The method blank was below the reporting limit for all target analytes.

9. Samples are reported on a wet weight 'as received' basis.

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 pages.

10. All initial calibrations associated with this data set were within acceptance criteria using the mean RSD described in method 8000B/8260B, the attached Table 1 provides the mean RSD and indicates the target compounds where the RSD exceeded 15%; results for the indicated target compounds are considered to have greater uncertainty.

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

12. All internal standard area and retention time criteria were met.

13. Manual integrations are performed according to SOP QA-125 to produce quality data with 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").

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

Iain Daniels
LvL Laboratory Manager

8/15/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: ~~12VO~~ 12VT012 m 8/2/12

Initiator: B. Rubino
Date: 8/2/12
Client: WC Hanford

Batch: 1207054
Samples: 001
Method: SW846/MCAWW/CLP/

Parameter: MSVOA
Matrix: solid
Prep Batch: _____

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)

① Sample vial was opened in the extraction lab before VOA analysis

② Elevated styrene recoveries in MSD possibly due to non-homogenous sample material

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description: Report + narrate

4. Project Manager Instructions...signature/date: 8/7/12

__ 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: 8/7/12

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

Other Explanation:

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

TABLE 1

FULL LIST - 8000B/8260B COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET

CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

MEAN RSD USED FOR EVALUATION: 8.479 INSTRUMENT ID/DATE: 5972K 7/11/12

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,1,1,2-Tetrachloroethane		Carbon Disulfide		trans-1,4-Dichloro-2-butene
	1,1,1-Trichloroethane		Carbon Tetrachloride		Trichloroethene
	1,1,2,2-Tetrachloroethane		Chlorobenzene		Trichlorofluoromethane
	1,1,2-Trichloroethane		Chloroethane		Vinyl acetate
	1,1-Dichloroethane		Chloroform		Vinyl chloride
	1,1-Dichloroethene		Chloromethane		Xylenes, total
	1,1-Dichloropropene		cis-1,2-Dichloroethene		
	1,2,3-Trichlorobenzene		cis-1,3-Dichloropropene		
	1,2,3-Trichloropropane		Cyclohexane		
	1,2,3-Trimethylbenzene		Cyclohexanone		
	1,2,4-Trichlorobenzene		Dibromochloromethane		
	1,2,4-Trimethylbenzene		Dibromofluoromethane		
	1,2-Dibromo-3-chloropropane		Dibromomethane		
	1,2-Dibromoethane		Dichlorodifluoromethane		
	1,2-Dichlorobenzene		Diethyl Ether		
	1,2-Dichloroethane		Ethyl Acetate		
	1,2-Dichloroethene (total)		Ethyl Methacrylate		
	1,2-Dichloropropane		Ethylbenzene		**Surrogates:**
	1,2-Xylene		Ethylene oxide		1,2-Dichloroethane-d4
	1,3- and 1,4-Xylenes		Freon-113		Toluene-d8
	1,3,5-Trimethylbenzene		Freon-114		4-Bromofluorobenzene
	1,3-Dichlorobenzene		Hexachlorobutadiene		
	1,3-Dichloropropane		Hexane		
	1,3-Dichloropropene (total)		Iodomethane		
	1,4-Dichlorobenzene		Isobutyl alcohol		
	1,4-Dioxane		Isopropylbenzene		
	2,2-Dichloropropane		Methacrylonitrile		
✓	2-Butanone		Methyl Acetate		
	2-Chloro-1,3-butadiene		Methyl Methacrylate		
	2-Chloroethyl Vinyl Ether		Methylcyclohexane		
	2-Chlorotoluene		Methylene Chloride		
	2-Hexanone		Methyl-tert-Butyl Ether		
	2-Nitropropane		Naphthalene		
	3-Chloropropene		n-Butyl Alcohol		
	4-Chlorotoluene		n-Butylbenzene		
	4-Isopropyltoluene		n-Propylbenzene		
	4-Methyl-2-pentanone		Pentachloroethane		
✓	Acetone		Propionitrile		
	Acetonitrile		sec-Butylbenzene		
	Acrolein		Styrene		
	Acrylonitrile		tert-Butyl alcohol		
	Benzene		tert-Butylbenzene		
	Bromobenzene		Tetrachloroethene		
	Bromochloromethane		Tetrahydrofuran		
	Bromodichloromethane		Toluene		
	Bromoform		trans-1,2-Dichloroethene		
	Bromomethane		trans-1,3-Dichloropropene		

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 concentration 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 quantitation 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 quantitation modifications:

MP	-	Missed Peak: Manually added peak not found by automatic quantitation program.
PA	-	Peak Assignment: quantitation 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
PI	-	Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

J1PW65
1207054-01 (Other Solid)

Lionville Laboratory

Volatile Organic Compounds by SW846 8260B

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,1,1-Trichloroethane	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,1,2,2-Tetrachloroethane	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,1,2-Trichloroethane	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,1-Dichloroethane	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,1-Dichloroethene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,2-Dichloroethane	5.42	U	5.42	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,2-Dichloroethene (total)	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
1,2-Dichloropropane	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
2-Butanone	10.8	U	10.8	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
2-Hexanone	10.8	U	10.8	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
4-Methyl-2-pentanone	10.8	U	10.8	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Acetone	**43.1**		10.8	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Benzene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Bromodichloromethane	5.42	U	5.42	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Bromoform	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Bromomethane	9.04	U	9.04	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Carbon Disulfide	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Carbon Tetrachloride	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Chlorobenzene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Chloroethane	9.04	U	9.04	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Chloroform	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Chloromethane	9.04	U	9.04	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
cis-1,2-Dichloroethene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
cis-1,3-Dichloropropene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Dibromochloromethane	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Ethylbenzene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Methylene Chloride	5.42	U	5.42	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Styrene	**135**		4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Tetrachloroethene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
trans-1,2-Dichloroethene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Toluene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
trans-1,3-Dichloropropene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Trichloroethene	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Vinyl chloride	9.04	U	9.04	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Xylenes, total	4.52	U	4.52	ug/kg wet	1	L207197	07/27/2012	07/27/2012	8260B
Surrogate: 1,2-Dichloroethane-d4	*108 %*		*60-130*			*L207197*	*07/27/2012*	*07/27/2012*	*8260B*

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Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

J1PW65

1207054-01 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Volatile Organic Compounds by SW846 8260B								
Surrogate: Toluene-d8	*81 %*	*72-117*			*L207197*	*07/27/2012*	*07/27/2012*	*8260B*
Surrogate: 4-Bromofluorobenzene	*118 %*	*72-144*			*L207197*	*07/27/2012*	*07/27/2012*	*8260B*

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Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207197 - SW 5035A										
Blank (L207197-BLK1)				Prepared & Analyzed: 07/27/2012						
1,1,1-Trichloroethane	5.00	U	5.00	ug/kg wet						
1,1,2,2-Tetrachloroethane	5.00	U	5.00	ug/kg wet						
1,1,2-Trichloroethane	5.00	U	5.00	ug/kg wet						
1,1-Dichloroethane	5.00	U	5.00	ug/kg wet						
1,1-Dichloroethene	5.00	U	5.00	ug/kg wet						
1,2-Dichloroethane	6.00	U	6.00	ug/kg wet						
1,2-Dichloroethene (total)	5.00	U	5.00	ug/kg wet						
1,2-Dichloropropane	5.00	U	5.00	ug/kg wet						
2-Butanone	12.0	U	12.0	ug/kg wet						
2-Hexanone	12.0	U	12.0	ug/kg wet						
4-Methyl-2-pentanone	12.0	U	12.0	ug/kg wet						
Acetone	12.0	U	12.0	ug/kg wet						
Benzene	5.00	U	5.00	ug/kg wet						
Bromodichloromethane	6.00	U	6.00	ug/kg wet						
Bromoform	5.00	U	5.00	ug/kg wet						
Bromomethane	10.0	U	10.0	ug/kg wet						
Carbon Disulfide	5.00	U	5.00	ug/kg wet						
Carbon Tetrachloride	5.00	U	5.00	ug/kg wet						
Chlorobenzene	5.00	U	5.00	ug/kg wet						
Chloroethane	10.0	U	10.0	ug/kg wet						
Chloroform	5.00	U	5.00	ug/kg wet						
Chloromethane	10.0	U	10.0	ug/kg wet						
cis-1,2-Dichloroethene	5.00	U	5.00	ug/kg wet						
cis-1,3-Dichloropropene	5.00	U	5.00	ug/kg wet						
Dibromochloromethane	5.00	U	5.00	ug/kg wet						
Ethylbenzene	5.00	U	5.00	ug/kg wet						
Methylene Chloride	6.00	U	6.00	ug/kg wet						
Styrene	5.00	U	5.00	ug/kg wet						
Tetrachloroethene	5.00	U	5.00	ug/kg wet						
trans-1,2-Dichloroethene	5.00	U	5.00	ug/kg wet						
Toluene	5.00	U	5.00	ug/kg wet						
trans-1,3-Dichloropropene	5.00	U	5.00	ug/kg wet						
Trichloroethene	5.00	U	5.00	ug/kg wet						
Vinyl chloride	10.0	U	10.0	ug/kg wet						
Xylenes, total	5.00	U	5.00	ug/kg wet						
Surrogate: 1,2-Dichloroethane-d4	*55.0*			*ug/kg wet*	*50.000*		*110*	*60-130*		

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Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207197 - SW 5035A									
Blank (L207197-BLK1)			Prepared & Analyzed: 07/27/2012						
Surrogate: Toluene-d8	*49.3*		*ug/kg wet*	*50.000*		*99*	*72-117*		
Surrogate: 4-Bromofluorobenzene	*61.9*		*ug/kg wet*	*50.000*		*124*	*72-144*		
LCS (L207197-BS1)			Prepared & Analyzed: 07/27/2012						
1,1,1-Trichloroethane	55.8	5.00	ug/kg wet	50.000		112	65-130		
1,1,2,2-Tetrachloroethane	45.9	5.00	ug/kg wet	50.000		92	50-130		
1,1,2-Trichloroethane	44.1	5.00	ug/kg wet	50.000		88	60-125		
1,1-Dichloroethane	60.3	5.00	ug/kg wet	50.000		121	70-130		
1,1-Dichloroethene	57.0	5.00	ug/kg wet	50.000		114	60-130		
1,2-Dichloroethane	52.4	6.00	ug/kg wet	50.000		105	60-130		
1,2-Dichloroethene (total)	115	5.00	ug/kg wet	100.00		115	75-125		
1,2-Dichloropropane	46.9	5.00	ug/kg wet	50.000		94	70-130		
2-Butanone	80.0	12.0	ug/kg wet	50.000		160	20-200		
2-Hexanone	62.6	12.0	ug/kg wet	50.000		125	20-200		
4-Methyl-2-pentanone	44.0	12.0	ug/kg wet	50.000		88	40-150		
Acetone	93.2	12.0	ug/kg wet	50.000		186	15-240		
Benzene	47.1	5.00	ug/kg wet	50.000		94	75-125		
Bromodichloromethane	50.8	6.00	ug/kg wet	50.000		102	65-135		
Bromoform	44.6	5.00	ug/kg wet	50.000		89	60-130		
Bromomethane	46.4	10.0	ug/kg wet	50.000		93	40-150		
Carbon Disulfide	54.6	5.00	ug/kg wet	50.000		109	55-140		
Carbon Tetrachloride	56.1	5.00	ug/kg wet	50.000		112	60-135		
Chlorobenzene	44.8	5.00	ug/kg wet	50.000		90	70-125		
Chloroethane	57.7	10.0	ug/kg wet	50.000		115	50-150		
Chloroform	55.1	5.00	ug/kg wet	50.000		110	70-130		
Chloromethane	56.5	10.0	ug/kg wet	50.000		113	40-130		
cis-1,2-Dichloroethene	54.8	5.00	ug/kg wet	50.000		110	70-125		
cis-1,3-Dichloropropene	39.5	5.00	ug/kg wet	50.000		79	70-125		
Dibromochloromethane	43.6	5.00	ug/kg wet	50.000		87	65-125		
Ethylbenzene	45.8	5.00	ug/kg wet	50.000		92	70-125		
Methylene Chloride	52.5	6.00	ug/kg wet	50.000		105	45-140		
Styrene	44.7	5.00	ug/kg wet	50.000		89	70-125		
Tetrachloroethene	48.0	5.00	ug/kg wet	50.000		96	60-130		
trans-1,2-Dichloroethene	60.0	5.00	ug/kg wet	50.000		120	65-130		
Toluene	43.4	5.00	ug/kg wet	50.000		87	70-125		
trans-1,3-Dichloropropene	47.2	5.00	ug/kg wet	50.000		94	65-125		
Trichloroethene	50.4	5.00	ug/kg wet	50.000		101	70-130		

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2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207197 - SW 5035A									
LCS (L207197-BS1)			Prepared & Analyzed: 07/27/2012						
Vinyl chloride	53.3	10.0	ug/kg wet	50.000		107	50-150		
Xylenes, total	139	5.00	ug/kg wet	150.00		92	70-125		
Surrogate: 1,2-Dichloroethane-d4	*52.5*		*ug/kg wet*	*50.000*		*105*	*60-130*		
Surrogate: Toluene-d8	*42.8*		*ug/kg wet*	*50.000*		*86*	*72-117*		
Surrogate: 4-Bromofluorobenzene	*55.1*		*ug/kg wet*	*50.000*		*110*	*72-144*		
Matrix Spike (L207197-MS2)		**Source: 1207054-01**	Prepared & Analyzed: 07/27/2012						
1,1,1-Trichloroethane	60.0	5.31	ug/kg wet	53.079	4.52 U	113	65-130		
1,1,2,2-Tetrachloroethane	47.2	5.31	ug/kg wet	53.079	4.52 U	89	50-130		
1,1,2-Trichloroethane	47.9	5.31	ug/kg wet	53.079	4.52 U	90	60-125		
1,1-Dichloroethane	54.1	5.31	ug/kg wet	53.079	4.52 U	102	70-130		
1,1-Dichloroethene	48.7	5.31	ug/kg wet	53.079	4.52 U	92	60-130		
1,2-Dichloroethane	57.6	6.37	ug/kg wet	53.079	5.42 U	109	60-130		
1,2-Dichloroethene (total)	97.9	5.31	ug/kg wet	106.16	4.52 U	92	75-125		
1,2-Dichloropropane	49.7	5.31	ug/kg wet	53.079	4.52 U	94	70-130		
2-Butanone	72.4	12.7	ug/kg wet	53.079	10.8 U	136	20-200		
2-Hexanone	60.8	12.7	ug/kg wet	53.079	10.8 U	114	20-200		
4-Methyl-2-pentanone	48.6	12.7	ug/kg wet	53.079	10.8 U	92	40-150		
Acetone	100	12.7	ug/kg wet	53.079	43.1	107	15-240		
Benzene	49.6	5.31	ug/kg wet	53.079	4.52 U	93	75-125		
Bromodichloromethane	54.5	6.37	ug/kg wet	53.079	5.42 U	103	65-135		
Bromoform	48.4	5.31	ug/kg wet	53.079	4.52 U	91	60-130		
Bromomethane	51.0	10.6	ug/kg wet	53.079	9.04 U	96	40-150		
Carbon Disulfide	46.3	5.31	ug/kg wet	53.079	4.52 U	87	55-140		
Carbon Tetrachloride	60.0	5.31	ug/kg wet	53.079	4.52 U	113	60-135		
Chlorobenzene	47.1	5.31	ug/kg wet	53.079	4.52 U	89	70-125		
Chloroethane	54.5	10.6	ug/kg wet	53.079	9.04 U	103	50-150		
Chloroform	58.3	5.31	ug/kg wet	53.079	4.52 U	110	70-130		
Chloromethane	47.7	10.6	ug/kg wet	53.079	9.04 U	90	40-130		
cis-1,2-Dichloroethene	49.0	5.31	ug/kg wet	53.079	4.52 U	92	70-125		
cis-1,3-Dichloropropene	53.7	5.31	ug/kg wet	53.079	4.52 U	101	70-125		
Dibromochloromethane	48.1	5.31	ug/kg wet	53.079	4.52 U	91	65-125		
Ethylbenzene	51.7	5.31	ug/kg wet	53.079	4.52 U	97	70-125		
Methylene Chloride	44.8	6.37	ug/kg wet	53.079	5.42 U	84	45-140		
Styrene	227	5.31	ug/kg wet	53.079	135	173*	70-125		
Tetrachloroethene	51.5	5.31	ug/kg wet	53.079	4.52 U	97	60-130		
trans-1,2-Dichloroethene	48.9	5.31	ug/kg wet	53.079	4.52 U	92	65-130		

264 Welsh Pool Road
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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207197 - SW 5035A									
Matrix Spike (L207197-MS2)		**Source: 1207054-01**	Prepared & Analyzed: 07/27/2012						
Toluene	50.8	5.31	ug/kg wet	53.079	4.52 U	96	70-125		
trans-1,3-Dichloropropene	53.0	5.31	ug/kg wet	53.079	4.52 U	100	65-125		
Trichloroethene	53.8	5.31	ug/kg wet	53.079	4.52 U	101	70-130		
Vinyl chloride	48.8	10.6	ug/kg wet	53.079	9.04 U	92	50-150		
Xylenes, total	152	5.31	ug/kg wet	159.24	4.52 U	96	70-125		
Surrogate: 1,2-Dichloroethane-d4	*57.0*		*ug/kg wet*	*53.079*		*107*	*60-130*		
Surrogate: Toluene-d8	*51.7*		*ug/kg wet*	*53.079*		*97*	*72-117*		
Surrogate: 4-Bromofluorobenzene	*58.5*		*ug/kg wet*	*53.079*		*110*	*72-144*		
Matrix Spike Dup (L207197-MSD2)		**Source: 1207054-01**	Prepared & Analyzed: 07/27/2012						
1,1,1-Trichloroethane	66.5	5.97	ug/kg wet	59.666	4.52 U	111	65-130	1	20
1,1,2,2-Tetrachloroethane	47.7	5.97	ug/kg wet	59.666	4.52 U	80	50-130	11	20
1,1,2-Trichloroethane	52.4	5.97	ug/kg wet	59.666	4.52 U	88	60-125	3	20
1,1-Dichloroethane	61.1	5.97	ug/kg wet	59.666	4.52 U	102	70-130	0.6	20
1,1-Dichloroethene	58.0	5.97	ug/kg wet	59.666	4.52 U	97	60-130	6	20
1,2-Dichloroethane	62.0	7.16	ug/kg wet	59.666	5.42 U	104	60-130	4	20
1,2-Dichloroethene (total)	112	5.97	ug/kg wet	119.33	4.52 U	94	75-125	1	20
1,2-Dichloropropane	55.5	5.97	ug/kg wet	59.666	4.52 U	93	70-130	0.8	20
2-Butanone	69.9	14.3	ug/kg wet	59.666	10.8 U	117	20-200	15	20
2-Hexanone	60.4	14.3	ug/kg wet	59.666	10.8 U	101	20-200	12	20
4-Methyl-2-pentanone	47.7	14.3	ug/kg wet	59.666	10.8 U	80	40-150	14	20
Acetone	91.2	14.3	ug/kg wet	59.666	43.1	81	15-240	28*	20
Benzene	56.3	5.97	ug/kg wet	59.666	4.52 U	94	75-125	1	20
Bromodichloromethane	58.8	7.16	ug/kg wet	59.666	5.42 U	99	65-135	4	20
Bromoform	51.0	5.97	ug/kg wet	59.666	4.52 U	86	60-130	6	20
Bromomethane	65.2	11.9	ug/kg wet	59.666	9.04 U	109	40-150	13	20
Carbon Disulfide	54.2	5.97	ug/kg wet	59.666	4.52 U	91	55-140	4	20
Carbon Tetrachloride	67.7	5.97	ug/kg wet	59.666	4.52 U	113	60-135	0.4	20
Chlorobenzene	55.0	5.97	ug/kg wet	59.666	4.52 U	92	70-125	4	20
Chloroethane	65.9	11.9	ug/kg wet	59.666	9.04 U	110	50-150	7	20
Chloroform	64.0	5.97	ug/kg wet	59.666	4.52 U	107	70-130	2	20
Chloromethane	57.6	11.9	ug/kg wet	59.666	9.04 U	97	40-130	7	20
cis-1,2-Dichloroethene	55.6	5.97	ug/kg wet	59.666	4.52 U	93	70-125	0.9	20
cis-1,3-Dichloropropene	62.7	5.97	ug/kg wet	59.666	4.52 U	105	70-125	4	20
Dibromochloromethane	54.2	5.97	ug/kg wet	59.666	4.52 U	91	65-125	0.2	20
Ethylbenzene	60.1	5.97	ug/kg wet	59.666	4.52 U	101	70-125	3	20
Methylene Chloride	55.3	7.16	ug/kg wet	59.666	5.42 U	93	45-140	9	20

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 10:37

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207197 - SW 5035A									
Matrix Spike Dup (L207197-MSD2)		**Source: 1207054-01**	Prepared & Analyzed: 07/27/2012						
Styrene	542	5.97	ug/kg wet	59.666	135	681*	70-125	119*	20
Tetrachloroethene	58.4	5.97	ug/kg wet	59.666	4.52 U	98	60-130	0.8	20
trans-1,2-Dichloroethene	56.1	5.97	ug/kg wet	59.666	4.52 U	94	65-130	2	20
Toluene	57.5	5.97	ug/kg wet	59.666	4.52 U	96	70-125	0.6	20
trans-1,3-Dichloropropene	56.6	5.97	ug/kg wet	59.666	4.52 U	95	65-125	5	20
Trichloroethene	60.1	5.97	ug/kg wet	59.666	4.52 U	101	70-130	0.6	20
Vinyl chloride	58.8	11.9	ug/kg wet	59.666	9.04 U	99	50-150	7	20
Xylenes, total	175	5.97	ug/kg wet	179.00	4.52 U	98	70-125	2	20
Surrogate: 1,2-Dichloroethane-d4	*60.4*		*ug/kg wet*	*59.666*		*101*	*60-130*		
Surrogate: Toluene-d8	*60.4*		*ug/kg wet*	*59.666*		*101*	*72-117*		
Surrogate: 4-Bromofluorobenzene	*65.5*		*ug/kg wet*	*59.666*		*110*	*72-144*		

PREPARATION BENCH SHEET

L207197

Lionville Laboratory

Printed: 7/31/2012 10:42:42AM

Matrix: Solid **Prepared using: VOAGCMS - SW 5035A** **Surrogate used: 0902344**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1207054-01	8260B TCL VOC	07/27/2012 09:50	5.53	5				5	WC-Hanford, Inc.	
1207059-01	8260B TCL VOC	07/27/2012 13:15	4.74	5				5	WC-Hanford, Inc.	
1207059-02	8260B TCL VOC	07/27/2012 13:53	4.64	5				5	WC-Hanford, Inc.	
1207059-03	8260B TCL VOC	07/27/2012 15:44	4.23	5				5	WC-Hanford, Inc.	
1207059-04	8260B TCL VOC	07/27/2012 16:21	4.17	5				5	WC-Hanford, Inc.	
1207059-05	8260B TCL VOC	07/27/2012 16:57	5.85	5				5	WC-Hanford, Inc.	
1207059-06	8260B TCL VOC	07/27/2012 17:34	4.38	5				5	WC-Hanford, Inc.	
1207059-08	8260B TCL VOC	07/27/2012 18:11	3.77	5				5	WC-Hanford, Inc.	
L207197-BLK1	QC	07/27/2012 09:05	5	5				5		
L207197-BS1	QC	07/27/2012 08:28	5	5	1200958		5	5		
L207197-MS1	QC	07/27/2012 14:30	4.45	5	1200958	1207059-01	5	5		
L207197-MS2	QC	07/27/2012 10:27	4.71	5	1200958	1207054-01	5	5		
L207197-MSD1	QC	07/27/2012 15:07	5.33	5	1200958	1207059-01	5	5		
L207197-MSD2	QC	07/27/2012 11:04	4.19	5	1200958	1207054-01	5	5		

R 8/1/12

Extracts Relinquished By Date

NAR 8/1/12

Extracts Received By Date

SEMIVOLATILES

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PW65	1207054-01	Other Solid	07/23/2012 14:40	07/25/2012 10:10

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-150 K3959
LVL #: 1207054

W.O. #: 60049-001-001-0001-00
Date Received: 07-25-2012

SEMIVOLATILE

One (1) other solid sample was collected on 07-23-2012.

The sample and associated QC samples were extracted 07-25-2012 and analyzed 08-01,03-2012 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 samples were extracted with a reduced initial volume. In addition, the samples had an elevated final volume of 10 mls. Reporting limits have been adjusted to reflect these changes.

4. Non-target compounds were detected in these samples.

5. Three (3) samples required dilution due to the sample matrix. Samples J1PW65, L207153-MS3 and L207153-MSD3 required 5-fold dilutions. Reporting limits have been adjusted to reflect the necessary dilutions.

6. Three (3) of thirty (30) obtainable surrogate recoveries were outside acceptance criteria. The surrogate recovery criteria were not met for samples L207153-MS3 and L207153-MSD3; however, the non-spiked sample was within criteria. Recovery criteria were not met due to matrix effects and dilution due for analysis.

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

8. All blank spike recoveries were within acceptance criteria.

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 pages.

9. Thirty-nine (39) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS143) has been enclosed. Several matrix spike recoveries were unobtainable due to dilution required for analysis.

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. Per method 8000B/8270C, the attached Table 1 shows the target compounds where the RSD exceeded 15%, and the mean RSD was used for evaluation of the initial calibration. Results associated with these compounds are considered to have greater uncertainty. Refer to the Analysis Batch Sequence Summary Forms to associate the calibration with client samples.

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

13. Internal standard area and retention time criteria were met.

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

8/15/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS143

Initiator: Shawn Saylor
Date: 8-7-12
Client: WC Hamb & K.3959

Batch: 1207054
Samples: L207153-ms3, msd3
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: Other Solid
Prep Batch: L207153

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)

Spike recoveries outside QC acceptance limits in L207153-ms3 and L207153-msd3 but L207153-BS1 is ok

2. Known or Probable Causes(s) Matrix effect samples required a 5 fold dilution for analysis, in addition had an elevated final volume of 10 mls

RW 8/15/12

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)

narrate

8/15/12

4. Project Manager Instructions...signature/date: _____

__ 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: 8/15/12 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

TABLE 1

TCL - 8000B/8270C COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

MEAN RSD USED FOR EVALUATION: 8.35 CALIBRATION: 1208002

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,2,4-Trichlorobenzene		Di-n-butyl Phthalate		**Surrogates:**
	1,2-Dichlorobenzene		Di-n-octyl Phthalate		2-Fluorophenol
	1,3-Dichlorobenzene		Fluoranthene		Phenol-d5
	1,4-Dichlorobenzene		Fluorene		Nitrobenzene-d5
	2,4,5-Trichlorophenol		Hexachlorobenzene		2-Fluorobiphenyl
	2,4,6-Trichlorophenol		Hexachlorobutadiene		2,4,6-Tribromophenol
	2,4-Dichlorophenol		Hexachlorocyclopentadiene		p-Terphenyl-d14
	2,4-Dimethylphenol		Hexachloroethane		
✓	2,4-Dinitrophenol		Indeno[1,2,3-cd]pyrene		
	2,4-Dinitrotoluene		Isophorone		
	2,6-Dinitrotoluene		Naphthalene		
	2-Chloronaphthalene		Nitrobenzene		
	2-Chlorophenol		N-Nitrosodi-n-propylamine		
	2-Methylnaphthalene		N-Nitrosodiphenylamine		
	2-Methylphenol		Pentachlorophenol		
	2-Nitroaniline		Phenanthrene		
	2-Nitrophenol		Phenol		
	3- and/or 4-Methylphenol		Pyrene		
	3,3'-Dichlorobenzidine				
✓	3-Nitroaniline				
	4,6-Dinitro-2-methylphenol		**OLM04.2 TCL addons:**		
	4-Bromophenyl Phenyl Ether		1,1-Biphenyl		
	4-Chloro-3-methylphenol		Atrazine		
	4-Chloroaniline		Benzaldehyde		
	4-Chlorophenyl Phenyl Ether		Caprolactam		
	4-Nitroaniline				
	4-Nitrophenol		**NonTCL addons:**		
	Acenaphthene		1,2-Diphenylhydrazine		
	Acenaphthylene		1,4-Dioxane		
	Anthracene		1-Methylnapthalene		
	Benz[a]anthracene		2,3,4,6-Tetrachlorophenol		
	Benzo[a] pyrene		Acetophenone		
	Benzo[b] fluoranthene		Aniline		
	Benzo[g,h,i] perylene		Benzidine		
	Benzo[k] fluoranthene		Benzoic Acid		
	Benzyl alcohol		N-Nitrosodimethylamine		
	Bis(2-chloroethoxy) methane		Pyridine		
	Bis(2-chloroethyl) ether		Tributylphosphate		
	Bis(2-chloroisopropyl) ether				
	Bis(2-ethylhexyl) phthalate				
	Butyl Benzyl Phthalate				
✓	Carbazole				
	Chrysene				
	Dibenz[a,h]anthracene				
	Dibenzofuran				
	Diethyl Phthalate				
	Dimethyl Phthalate				

INITIAL CALIBRATION DATA

Start Cal Date : 31-JUL-2012 14:07
End Cal Date : 31-JUL-2012 17:24
Quant Method : ISTD
Origin : Disabled
Target Version : 4.04
Integrator : HP RTE
Method file : \\LILAN04\D\chem\MSBNA\5972D.i\D073112.b\8270.m
Cal Date : 01-Aug-2012 11:40 target
Curve Type : Average

Calibration File Names:
Level 1: \\LILAN04\D\chem\MSBNA\5972D.i\D073112.b\D073104.D
Level 2: \\LILAN04\D\chem\MSBNA\5972D.i\D073112.b\D073105.D
Level 3: \\LILAN04\D\chem\MSBNA\5972D.i\D073112.b\D073106.D
Level 4: \\LILAN04\D\chem\MSBNA\5972D.i\D073112.b\D073107.D
Level 5: \\LILAN04\D\chem\MSBNA\5972D.i\D073112.b\D073103.D

Compound	10 Level 1	25 Level 2	40 Level 3	60 Level 4	80 Level 5	___ RRF	% RSD
15 1,4-Dioxane	0.39586	0.35896	0.43215	0.45081	0.44985	0.41752	9.479
16 N-nitrosodimethylamine	0.4322	0.46293	0.49928	0.41407	0.4771	0.45711	7.486
17 Pyridine	1.01907	1.02748	1.06691	0.90361	1.01594	1.0066	6.068
20 Phenol	1.33825	1.28774	1.31128	1.11109	1.15301	1.24027	8.183
21 Aniline	0.49121	0.46873	0.49243	0.444	0.48371	0.47601	4.251
22 Bis(2-Chloroethyl)ether	0.79855	0.77789	0.75933	0.65756	0.68708	0.73608	8.252
23 2-Chlorophenol	1.41942	1.37221	1.38871	1.19148	1.2781	1.32998	7.044
24 1,3-Dichlorobenzene	1.62172	1.53766	1.55734	1.33955	1.46237	1.50373	7.179
25 1,4-Dichlorobenzene	1.63902	1.57958	1.59822	1.36011	1.47696	1.53078	7.352
26 Benzyl alcohol	0.6193	0.64711	0.68101	0.59937	0.65438	0.64024	4.95
27 1,2-Dichlorobenzene	1.51199	1.44601	1.46178	1.23787	1.29999	1.39153	8.381
28 2-Methylphenol	1.0784	1.0266	1.03572	0.89245	0.92463	0.99156	7.976
29 bis(2-Chloroisopropyl)eth	2.01072	1.93612	1.93182	1.59763	1.59304	1.81387	11.134
30 Acetophenone	0.37459	0.35756	0.37901	0.35713	0.32451	0.35856	5.978
31 4-Methylphenol	1.03478	1.04942	1.04745	0.90458	0.97845	1.00293	6.192
32 N-Nitroso-di-n-propylamin	0.35291	0.35393	0.36948	0.2993	0.2996	0.33504	9.894
34 Hexachloroethane	0.64849	0.64001	0.64826	0.54147	0.58872	0.61339	7.706
35 Nitrobenzene	0.26113	0.25828	0.25764	0.21762	0.23535	0.24601	7.697
36 Isophorone	0.51616	0.51212	0.5008	0.4205	0.44743	0.4794	8.954
37 2,4-Dimethylphenol	0.29809	0.28732	0.28678	0.24667	0.25073	0.27392	8.58
38 2-Nitrophenol	0.21231	0.20741	0.20871	0.17857	0.18756	0.19891	7.502
39 Bis(2-Chloroethoxy)metha	0.36782	0.35233	0.34474	0.28971	0.29239	0.3294	10.927
40 Benzoic acid	0.11387	0.14243	0.16902	0.16763	0.16834	0.15226	15.905
41 2,4-Dichlorophenol	0.2709	0.27402	0.27976	0.24829	0.27182	0.26896	4.484
42 1,2,4-Trichlorobenzene	0.30115	0.29439	0.29466	0.25316	0.27837	0.28435	6.805
43 Naphthalene	1.06653	1.00237	0.98281	0.80711	0.83093	0.93795	12.07
44 4-Chloroaniline	0.38629	0.3576	0.37838	0.3352	0.36234	0.36396	5.455
46 Hexachlorobutadiene	0.17266	0.16425	0.16457	0.13993	0.16286	0.16085	7.653
48 4-Chloro-3-methylphenol	0.24449	0.24668	0.25349	0.21974	0.23906	0.24069	5.32
49 2-Methylnaphthalene	0.64279	0.61054	0.6063	0.52263	0.54467	0.58539	8.525
50 1-Methylnaphthalene	0.60581	0.57999	0.57304	0.4858	0.5122	0.55137	9.107
52 Hexachlorocyclopentadie	0.2495	0.27201	0.29753	0.27297	0.32581	0.28356	10.26
53 2,4,6-Trichlorophenol	0.35696	0.36815	0.36026	0.3229	0.36275	0.3542	5.074
54 2,4,5-Trichlorophenol	0.3501	0.35036	0.35701	0.32124	0.38206	0.35215	6.158
56 2-Chloronaphthalene	1.18529	1.13951	1.1416	0.98487	1.06282	1.10282	7.192
58 2-Nitroaniline	0.22928	0.23372	0.2396	0.2083	0.23468	0.22911	5.325
59 1,4-Dinitrobenzene	0.19694	0.19421	0.21169	0.18562	0.21936	0.20156	6.788
60 Dimethylphthalate	1.33867	1.30563	1.28778	1.12322	1.22065	1.25519	6.805
61 2,6-Dinitrotoluene	0.31114	0.31245	0.31181	0.2787	0.31497	0.30581	4.979

62	Acenaphthylene	1.82309	1.7663	1.73828	1.51298	1.6216	1.69245	7.347	
63	1,3-Dinitrobenzene	0.23555	0.23183	0.24795	0.21836	0.24869	0.23647	5.313	
64	1,2-Dinitrobenzene	0.15731	0.15637	0.16212	0.14399	0.16355	0.15667	4.926	
65	3-Nitroaniline	0.23363	0.22096	0.29206	0.30085	0.33688	0.27688	17.51	
66	Acenaphthene	1.18252	1.13254	1.11882	0.95615	1.00817	1.07964	8.698	
67	2,4-Dinitrophenol	0.09758	0.13446	0.16688	0.16097	0.18772	0.14952	23.208	<-
68	4-Nitrophenol	0.12073	0.11865	0.13695	0.1224	0.15173	0.13009	10.822	
69	Dibenzofuran	1.52862	1.45929	1.45248	1.24776	1.31395	1.40042	8.25	
70	2,4-Dinitrotoluene	0.31114	0.31245	0.31181	0.2787	0.31497	0.30581	4.979	
72	2,3,5,6-Tetrachloropheno	0.25803	0.26696	0.28002	0.25303	0.29629	0.27087	6.469	
73	2,3,4,6-Tetrachloropheno	0.27547	0.27231	0.27917	0.25226	0.29655	0.27515	5.764	
74	Diethylphthalate	1.40554	1.36166	1.37327	1.18401	1.2755	1.32	6.814	
75	4-Chlorophenyl-phenyleth	0.53123	0.51307	0.51019	0.44562	0.4853	0.49708	6.658	
76	Fluorene	1.25871	1.21284	1.19715	1.02394	1.09632	1.15779	8.246	
77	Tributylphosphate	1.46762	1.48109	1.56333	1.50801	1.34739	1.47349	5.393	
78	4-Nitroaniline	0.25065	0.22271	0.24592	0.2767	0.3202	0.26323	14.122	
79	4,6-Dinitro-2-methylpheno	0.11605	0.13176	0.14416	0.1328	0.15063	0.13508	9.812	
80	N-Nitrosodiphenylamine	0.67575	0.63936	0.65076	0.55185	0.58968	0.62148	8.038	
81	1,2-Diphenylhydrazine	0.7325	0.7072	0.68618	0.57925	0.57854	0.65673	11.104	
82	4-Bromophenyl-phenyleth	0.20507	0.19888	0.20318	0.17679	0.19039	0.19486	5.942	
83	Hexachlorobenzene	0.26173	0.24595	0.25403	0.22056	0.2423	0.24492	6.347	
85	Pentachlorophenol	0.10483	0.12478	0.13759	0.13038	0.15856	0.13123	14.889	
86	Phenanthrene	1.12508	1.04553	1.0286	0.86397	0.87984	0.9886	11.402	
87	Anthracene	1.1618	1.07249	1.07823	0.90796	0.8928	1.02265	11.461	
88	Carbazole	0.5787	0.55644	0.6995	0.79419	0.83387	0.69254	17.954	
89	2-Benzyl-4-chlorophenol	0.27186	0.2809	0.29946	0.29854	0.26626	0.28341	5.354	
90	Di-n-butylphthalate	1.63167	1.56262	1.49597	1.21542	1.17065	1.41526	14.772	
91	Fluoranthene	1.02182	0.97334	0.96439	0.81349	0.85923	0.92645	9.35	
92	Benzidine	0.10511	0.10577	0.18147	0.28143	0.28445	0.19165	46.407	<-
93	Pyrene	1.1717	1.09762	1.04919	0.88013	0.89728	1.01918	12.46	
94	Butylbenzylphthalate	0.80349	0.77909	0.7577	0.6424	0.66501	0.72954	9.807	
95	bis(2-Ethylhexyl)adipate	0.63036	0.63493	0.6278	0.5359	0.52784	0.59137	9.207	
96	Bis(2-Ethylhexyl)phthalate	0.94418	0.975	0.97646	0.84573	0.88733	0.92574	6.209	
97	3,3-Dichlorobenzidine	0.25975	0.25453	0.29562	0.3169	0.32165	0.28969	10.821	
98	Benzo(a)anthracene	0.99078	0.94835	0.92839	0.80256	0.89191	0.9124	7.784	
99	Chrysene	0.93409	0.88329	0.8651	0.7525	0.83121	0.85324	7.909	
100	Di-n-Octylphthalate	1.69668	1.90393	1.96237	1.72415	1.79616	1.81666	6.29	
101	Benzo(b)fluoranthene	1.09282	1.10314	1.12996	0.97092	1.08635	1.07664	5.703	
102	Benzo(k)fluoranthene	1.20143	1.158	1.12733	0.99072	1.0861	1.11272	7.207	
103	Benzo(a)pyrene	0.97364	0.98977	1.0118	0.88916	0.99665	0.9722	4.979	
104	Indeno(1,2,3-cd)pyrene	1.05227	1.05745	1.05872	0.94539	1.06877	1.03652	4.948	
105	Dibenz(a,h)anthracene	0.87267	0.86407	0.891	0.81335	0.90341	0.8689	3.988	
106	Benzo(g,h,i)perylene	0.93182	0.91408	0.91229	0.81813	0.92671	0.9006	5.201	
$ 7	2-Fluorophenol	1.02142	1.03685	1.12249	1.10638	1.10316	1.07806	4.229	
$ 8	Phenol-d5	1.17936	1.15009	1.22264	1.23101	1.16027	1.18867	3.07	
$ 9	2-Chlorophenol-d4	1.32396	1.30465	1.37186	1.38071	1.31895	1.34003	2.537	
$ 10	1,2-Dichlorobenzene-d4	0.87941	0.83119	0.90167	0.89749	0.8421	0.87037	3.692	
$ 11	Nitrobenzene-d5	0.24009	0.2423	0.24982	0.24832	0.24143	0.24439	1.79	
$ 12	2-Fluorobiphenyl	1.18875	1.15325	1.19889	1.1831	1.11861	1.16852	2.795	
$ 13	2,4,6-Tribromophenol	0.11817	0.11555	0.1293	0.13627	0.1421	0.12828	8.89	
$ 14	P-Terphenyl-d14	0.70064	0.66972	0.68772	0.6725	0.60654	0.66742	5.43	
Mean								8.348522	

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K3959
Client:	WC-Hanford, Inc.	Project:	RC-150
Sequence:	2080004	Instrument:	HP5972D
Matrix:	Solid	Calibration:	1208002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2080004-TUN1	D073101.D	07/31/12 12:55
Cal Standard	2080004-CAL5	D073103.D	07/31/12 14:07
Cal Standard	2080004-CAL1	D073104.D	07/31/12 14:56
Cal Standard	2080004-CAL2	D073105.D	07/31/12 15:45
Cal Standard	2080004-CAL3	D073106.D	07/31/12 16:35
Cal Standard	2080004-CAL4	D073107.D	07/31/12 17:24
Secondary Cal Check	2080004-SCV1	D073108.D	07/31/12 18:13

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K3959
Client:	WC-Hanford, Inc.	Project:	RC-150
Sequence:	2080007	Instrument:	HP5972D
Matrix:	Solid	Calibration:	1208002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2080007-TUN1	D080101.D	08/01/12 11:25
Calibration Check	2080007-CCV1	D080102.D	08/01/12 11:48
J1PW65	1207054-01	D080110.D	08/01/12 18:31
J1PW65	L207153-MS3	D080111.D	08/01/12 19:20
J1PW65	L207153-MSD3	D080112.D	08/01/12 20:09

TABLE 1

TCL - 8000B/8270C COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

MEAN RSD USED FOR EVALUATION: 9.74 CALIBRATION: 1208005

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,2,4-Trichlorobenzene		Di-n-butyl Phthalate		**Surrogates:**
	1,2-Dichlorobenzene		Di-n-octyl Phthalate		2-Fluorophenol
	1,3-Dichlorobenzene		Fluoranthene		Phenol-d5
	1,4-Dichlorobenzene		Fluorene		Nitrobenzene-d5
	2,4,5-Trichlorophenol		Hexachlorobenzene		2-Fluorobiphenyl
	2,4,6-Trichlorophenol		Hexachlorobutadiene		2,4,6-Tribromophenol
	2,4-Dichlorophenol	✓	Hexachlorocyclopentadiene		p-Terphenyl-d14
	2,4-Dimethylphenol		Hexachloroethane		
✓	2,4-Dinitrophenol		Indeno[1,2,3-cd]pyrene		
	2,4-Dinitrotoluene		Isophorone		
	2,6-Dinitrotoluene		Naphthalene		
	2-Chloronaphthalene		Nitrobenzene		
	2-Chlorophenol		N-Nitrosodi-n-propylamine		
	2-Methylnaphthalene		N-Nitrosodiphenylamine		
	2-Methylphenol	✓	Pentachlorophenol		
	2-Nitroaniline		Phenanthrene		
	2-Nitrophenol		Phenol		
	3- and/or 4-Methylphenol		Pyrene		
	3,3'-Dichlorobenzidine				
✓	3-Nitroaniline				
✓	4,6-Dinitro-2-methylphenol		**OLM04.2 TCL addons:**		
	4-Bromophenyl Phenyl Ether		1,1-Biphenyl		
	4-Chloro-3-methylphenol		Atrazine		
	4-Chloroaniline		Benzaldehyde		
	4-Chlorophenyl Phenyl Ether		Caprolactam		
	4-Nitroaniline				
✓	4-Nitrophenol		**NonTCL addons:**		
	Acenaphthene		1,2-Diphenylhydrazine		
	Acenaphthylene		1,4-Dioxane		
	Anthracene		1-Methylnapthalene		
	Benz[a]anthracene		2,3,4,6-Tetrachlorophenol		
	Benzo[a] pyrene		Acetophenone		
	Benzo[b] fluoranthene		Aniline		
	Benzo[g,h,i] perylene		Benzidine		
	Benzo[k] fluoranthene		Benzoic Acid		
	Benzyl alcohol		N-Nitrosodimethylamine		
	Bis(2-chloroethoxy) methane		Pyridine		
	Bis(2-chloroethyl) ether		Tributylphosphate		
	Bis(2-chloroisopropyl) ether				
	Bis(2-ethylhexyl) phthalate				
	Butyl Benzyl Phthalate				
✓	Carbazole				
	Chrysene				
	Dibenz[a,h]anthracene				
	Dibenzofuran				
	Diethyl Phthalate				
	Dimethyl Phthalate				

Lionville Laboratory Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 03-AUG-2012 13:04
End Cal Date : 03-AUG-2012 16:20
Quant Method : ISTD
Origin : Disabled
Target Version : 4.04
Integrator : HP RTE
Method file : \\LILAN04\D\chem\MSBNA\5972D.i\D080312.b\8270.m
Cal Date : 06-Aug-2012 09:03 target
Curve Type : Average

Calibration File Names:
Level 1: \\LILAN04\D\chem\MSBNA\5972D.i\D080312.b\D080304.D
Level 2: \\LILAN04\D\chem\MSBNA\5972D.i\D080312.b\D080305.D
Level 3: \\LILAN04\D\chem\MSBNA\5972D.i\D080312.b\D080306.D
Level 4: \\LILAN04\D\chem\MSBNA\5972D.i\D080312.b\D080307.D
Level 5: \\LILAN04\D\chem\MSBNA\5972D.i\D080312.b\D080303.D

Compound	10 Level 1	25 Level 2	40 Level 3	60 Level 4	80 Level 5	RRF	% RSD	
15 1,4-Dioxane	0.40026	0.37905	0.35718	0.49566	0.46161	0.41875	13.853	
16 N-nitrosodimethylamine	0.45051	0.50802	0.53257	0.45287	0.51804	0.4924	7.755	
17 Pyridine	1.07655	1.08629	1.13675	0.96285	1.04926	1.06234	6.024	
20 Phenol	1.28351	1.36952	1.32325	1.09844	1.04482	1.22391	11.73	
21 Aniline	0.51721	0.50606	0.53574	0.46491	0.48464	0.50172	5.515	
22 Bis(2-Chloroethyl)ether	0.85533	0.87229	0.83437	0.69238	0.71913	0.7947	10.424	
23 2-Chlorophenol	1.44368	1.48465	1.48096	1.20666	1.17968	1.35912	11.231	
24 1,3-Dichlorobenzene	1.71243	1.67696	1.67107	1.38905	1.48336	1.58657	8.959	
25 1,4-Dichlorobenzene	1.69005	1.71055	1.6533	1.40628	1.48285	1.58861	8.549	
26 Benzyl alcohol	0.29707	0.40335	0.47756	0.4608	0.31183	0.39012	21.294	<-
27 1,2-Dichlorobenzene	1.56644	1.57973	1.52751	1.27123	1.33762	1.4565	9.756	
28 2-Methylphenol	1.05777	1.1032	1.06905	0.87844	0.93309	1.00831	9.623	
29 bis(2-Chloroisopropyl)eth	2.09975	2.1406	2.03034	1.65892	1.657	1.91732	12.519	
30 Acetophenone	0.39642	0.40212	0.40504	0.38321	0.35309	0.38798	5.472	
31 4-Methylphenol	1.03183	1.08406	1.1046	0.90815	0.858	0.99733	10.936	
32 N-Nitroso-di-n-propylamin	0.42236	0.42982	0.40344	0.33285	0.34653	0.387	11.501	
34 Hexachloroethane	0.68447	0.71768	0.71627	0.59729	0.62461	0.66806	8.182	
35 Nitrobenzene	0.27856	0.29017	0.28234	0.24493	0.25475	0.27015	7.153	
36 Isophorone	0.5613	0.56897	0.54746	0.4541	0.47019	0.5204	10.385	
37 2,4-Dimethylphenol	0.28138	0.30744	0.29645	0.24749	0.23301	0.27315	11.657	
38 2-Nitrophenol	0.19345	0.22951	0.21925	0.18457	0.1941	0.20417	9.391	
39 Bis(2-Chloroethoxy)metha	0.37666	0.39087	0.37452	0.30661	0.30907	0.35155	11.492	
40 Benzoic acid	0.15841	0.1705	0.21882	0.22612	0.23758	0.20229	17.516	
41 2,4-Dichlorophenol	0.26074	0.25833	0.26863	0.2411	0.25861	0.25748	3.909	
42 1,2,4-Trichlorobenzene	0.30087	0.30904	0.30018	0.25662	0.2767	0.28868	7.483	
43 Naphthalene	1.09268	1.08752	1.02514	0.85327	0.85179	0.98208	12.343	
44 4-Chloroaniline	0.3589	0.34882	0.36413	0.34432	0.33585	0.3504	3.229	
46 Hexachlorobutadiene	0.16649	0.17245	0.17041	0.14883	0.15964	0.16356	5.856	
48 4-Chloro-3-methylphenol	0.18579	0.21848	0.24922	0.22471	0.22962	0.22156	10.411	
49 2-Methylnaphthalene	0.65121	0.66781	0.64012	0.54301	0.55716	0.61186	9.392	
50 1-Methylnaphthalene	0.61013	0.62524	0.60656	0.51295	0.52713	0.5764	9.051	
52 Hexachlorocyclopentadie	0.16278	0.21617	0.2589	0.23667	0.26735	0.22837	18.28	✓
53 2,4,6-Trichlorophenol	0.361	0.38297	0.38579	0.33066	0.34059	0.3602	6.844	
54 2,4,5-Trichlorophenol	0.2856	0.3488	0.34858	0.31724	0.34443	0.32893	8.375	
56 2-Chloronaphthalene	1.21915	1.27743	1.20346	1.04499	1.09522	1.16805	8.153	
58 2-Nitroaniline	0.24594	0.26964	0.27831	0.2441	0.25614	0.25883	5.753	
59 1,4-Dinitrobenzene	0.18836	0.21296	0.21968	0.20089	0.21692	0.20776	6.26	

60 Dimethylphthalate	1.41656	1.46339	1.41518	1.21975	1.2417	1.35132	8.292	
61 2,6-Dinitrotoluene	0.32656	0.33784	0.34489	0.3054	0.32093	0.32712	4.69	
62 Acenaphthylene	1.89519	1.93152	1.88363	1.62224	1.65743	1.798	8.12	
63 1,3-Dinitrobenzene	0.22541	0.26023	0.25553	0.2295	0.24669	0.24347	6.355	
64 1,2-Dinitrobenzene	0.15521	0.1699	0.17166	0.15624	0.16912	0.16443	4.868	
65 3-Nitroaniline	0.20214	0.2165	0.27969	0.30986	0.32719	0.26708	20.827	<-
66 Acenaphthene	1.22685	1.24989	1.18162	1.02442	1.04641	1.14584	9.08	
67 2,4-Dinitrophenol	0.05199	0.10116	0.13788	0.13695	0.13795	0.11318	33.285	<-
68 4-Nitrophenol	0.06991	0.09347	0.12676	0.12175	0.12519	0.10742	23.259	<-
69 Dibenzofuran	1.59162	1.62408	1.53722	1.31408	1.32696	1.47879	9.998	
70 2,4-Dinitrotoluene	0.32656	0.33784	0.34489	0.3054	0.32093	0.32712	4.69	
72 2,3,5,6-Tetrachloropheno	0.23764	0.27623	0.28297	0.25141	0.24794	0.25924	7.488	
73 2,3,4,6-Tetrachloropheno	0.24716	0.27921	0.28311	0.25719	0.26109	0.26555	5.721	
74 Diethylphthalate	1.53585	1.58007	1.52852	1.3036	1.3353	1.45667	8.739	
75 4-Chlorophenyl-phenyleth	0.53445	0.55639	0.53712	0.46357	0.49006	0.51632	7.4	
76 Fluorene	1.26505	1.31332	1.26914	1.08054	1.11161	1.20793	8.645	
77 Tributylphosphate	1.67088	1.80915	1.76076	1.7026	1.488	1.68628	7.291	
78 4-Nitroaniline	0.23313	0.22894	0.23812	0.26035	0.28596	0.2493	9.55	
79 4,6-Dinitro-2-methylpheno	0.07967	0.11521	0.13467	0.1295	0.13438	0.11869	19.549	
80 N-Nitrosodiphenylamine	0.65808	0.6864	0.68944	0.61669	0.64561	0.65924	4.58	
81 1,2-Diphenylhydrazine	0.79141	0.82168	0.78271	0.66749	0.6914	0.75094	8.973	
82 4-Bromophenyl-phenyleth	0.20365	0.20657	0.20785	0.18561	0.2013	0.201	4.464	
83 Hexachlorobenzene	0.24841	0.25498	0.25644	0.22794	0.25181	0.24792	4.674	
85 Pentachlorophenol	0.08773	0.11939	0.1334	0.13446	0.1347	0.12194	16.543	
86 Phenanthrene	1.14831	1.13488	1.08206	0.94562	0.95421	1.05302	9.247	
87 Anthracene	1.15095	1.1567	1.13744	0.98101	0.95976	1.07717	9.1	
88 Carbazole	0.53533	0.61597	0.67257	0.76906	0.83128	0.68484	17.244	
89 2-Benzyl-4-chlorophenol	0.19493	0.24026	0.27431	0.2884	0.2638	0.25234	14.502	
90 Di-n-butylphthalate	1.77682	1.77214	1.63168	1.38152	1.26824	1.56608	14.768	
91 Fluoranthene	1.01076	1.04713	1.0156	0.87367	0.8794	0.96531	8.522	
92 Benzidine	0.11332	0.08457	0.12684	0.22391	0.27667	0.16506	49.346	<-
93 Pyrene	1.35544	1.28383	1.23847	1.0114	1.08493	1.19482	11.935	
94 Butylbenzylphthalate	0.9791	0.96743	0.92984	0.77703	0.83125	0.89693	9.893	
95 bis(2-Ethylhexyl)adipate	0.81905	0.84065	0.80068	0.65262	0.69676	0.76195	10.814	
96 Bis(2-Ethylhexyl)phthalate	1.23472	1.25584	1.22647	1.0395	1.12151	1.17561	7.839	
97 3,3-Dichlorobenzidine	0.24453	0.26667	0.29671	0.32508	0.30639	0.28788	11.167	
98 Benzo(a)anthracene	1.03539	1.05275	1.06182	0.91306	0.97651	1.0079	6.207	
99 Chrysene	0.96264	0.99427	0.9722	0.83211	0.90344	0.93293	7.033	
100 Di-n-Octylphthalate	2.37178	2.58192	2.53645	2.18936	2.42398	2.4207	6.377	
101 Benzo(b)fluoranthene	1.18161	1.27893	1.25108	1.1311	1.21811	1.21217	4.795	
102 Benzo(k)fluoranthene	1.20005	1.28056	1.25772	1.09296	1.232	1.21266	6.046	
103 Benzo(a)pyrene	1.01392	1.10393	1.10296	1.0115	1.10041	1.06654	4.61	
104 Indeno(1,2,3-cd)pyrene	0.97274	1.07291	1.07445	0.98789	1.09293	1.04019	5.333	
105 Dibenz(a,h)anthracene	0.79008	0.8879	0.90707	0.83838	0.91005	0.8667	5.948	
106 Benzo(g,h,i)perylene	0.86938	0.95141	0.93269	0.87404	0.95532	0.91657	4.567	
$ 7 2-Fluorophenol	1.04354	1.10411	1.14893	1.10521	0.90169	1.0607	9.095	
$ 8 Phenol-d5	1.20946	1.24266	1.28369	1.21954	1.07907	1.20688	6.375	
$ 9 2-Chlorophenol-d4	1.3027	1.39145	1.43642	1.37654	1.21493	1.34441	6.465	
$ 10 1,2-Dichlorobenzene-d4	0.90183	0.9138	0.9469	0.8895	0.83796	0.898	4.431	
$ 11 Nitrobenzene-d5	0.2575	0.26973	0.28355	0.27813	0.26103	0.26999	4.086	
$ 12 2-Fluorobiphenyl	1.21083	1.24593	1.25051	1.24231	1.15728	1.22137	3.2	
$ 13 2,4,6-Tribromophenol	0.09932	0.10645	0.11981	0.12728	0.11985	0.11454	9.909	
$ 14 P-Terphenyl-d14	0.78214	0.76531	0.76364	0.73368	0.70399	0.74975	4.131	
Mean							9.736911	

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K3959
Client:	WC-Hanford, Inc.	Project:	RC-150
Sequence:	2080024	Instrument:	HP5972D
Matrix:	Solid	Calibration:	1208005

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2080024-TUN1	D080301.D	08/03/12 11:45
Cal Standard	2080024-CAL5	D080303.D	08/03/12 13:04
Cal Standard	2080024-CAL1	D080304.D	08/03/12 13:53
Cal Standard	2080024-CAL2	D080305.D	08/03/12 14:42
Cal Standard	2080024-CAL3	D080306.D	08/03/12 15:31
Cal Standard	2080024-CAL4	D080307.D	08/03/12 16:20
Secondary Cal Check	2080024-SCV1	D080308.D	08/03/12 17:09
LCS	L207153-BS1	D080310.D	08/03/12 18:47
Blank	L207153-BLK1	D080311.D	08/03/12 19:36

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 concentration 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 quantitation 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 quantitation modifications:

MP - Missed Peak: Manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation 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

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/15/2012 08:52

J1PW65
1207054-01 (Other Solid)

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,2,4-Trichlorobenzene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
1,2-Dichlorobenzene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
1,3-Dichlorobenzene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
1,4-Dichlorobenzene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,4,5-Trichlorophenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,4,6-Trichlorophenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,4-Dichlorophenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,4-Dimethylphenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,4-Dinitrophenol	425000	U	425000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,4-Dinitrotoluene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2,6-Dinitrotoluene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2-Chloronaphthalene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2-Chlorophenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2-Methylnaphthalene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2-Methylphenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2-Nitroaniline	425000	U	425000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
2-Nitrophenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
3,3'-Dichlorobenzidine	170000	U	170000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
3-Nitroaniline	425000	U	425000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4,6-Dinitro-2-methylphenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4-Bromophenyl Phenyl Ether	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4-Chloro-3-methylphenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4-Chloroaniline	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4-Chlorophenyl Phenyl Ether	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
3- and/or 4-Methylphenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4-Nitroaniline	425000	U	425000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
4-Nitrophenol	425000	U	425000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Acenaphthene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Acenaphthylene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Anthracene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Benz[a]anthracene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Benzo[a] pyrene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Benzo[b] fluoranthene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Benzo[g,h,i] perylene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Benzo[k] fluoranthene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Bis(2-chloroethoxy) methane	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

J1PW65
1207054-01 (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	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Bis(2-chloroisopropyl) ether	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Bis(2-ethylhexyl) phthalate	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Butyl Benzyl Phthalate	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Carbazole	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Chrysene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Dibenz[a,h]anthracene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Dibenzofuran	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Diethyl Phthalate	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Dimethyl Phthalate	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Di-n-butyl Phthalate	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Di-n-octyl Phthalate	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Fluoranthene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Fluorene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Hexachlorobenzene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Hexachlorobutadiene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Hexachlorocyclopentadiene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Hexachloroethane	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Indeno[1,2,3-cd]pyrene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Isophorone	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Naphthalene	**15600**	J, D	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Nitrobenzene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
N-Nitrosodi-n-propylamine	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
N-Nitrosodiphenylamine	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Pentachlorophenol	425000	U	425000	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Phenanthrene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Phenol	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Pyrene	84900	U	84900	ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
TIC:Aldol Condensate 1	**398000**	A, B, J, D		ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
TIC:Unknown 1	**165000**	J, D		ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
TIC:Unknown 2	**866000**	J, D		ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
TIC:Unknown 3	**2170000**	J, D		ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
TIC:Unknown 4	**284000**	J, D		ug/kg wet	5	L207153	07/25/2012	08/01/2012	8270C
Surrogate: 2-Fluorophenol	*94 %*		*25-121*			*L207153*	*07/25/2012*	*08/01/2012*	*8270C*
Surrogate: Phenol-d5	*104 %*		*24-113*			*L207153*	*07/25/2012*	*08/01/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*101 %*		*23-120*			*L207153*	*07/25/2012*	*08/01/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

J1PW65
1207054-01 (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	*96 %*	*30-115*			*L207153*	*07/25/2012*	*08/01/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*75 %*	*19-122*			*L207153*	*07/25/2012*	*08/01/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*98 %*	*18-137*			*L207153*	*07/25/2012*	*08/01/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

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 L207153 - SW 3540C										
Blank (L207153-BLK1)				Prepared: 07/25/2012 Analyzed: 08/03/2012						
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: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

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 L207153 - SW 3540C										
Blank (L207153-BLK1)				Prepared: 07/25/2012 Analyzed: 08/03/2012						
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						
Trichloro-1-propene TICs	474	J		ug/kg wet						
Aldol Condensate 4	1110	A, J		ug/kg wet						
Aldol Condensate 3	1000	A, J		ug/kg wet						
Aldol Condensate 2 RGW 8/15/12	27400	A, J		ug/kg wet						
Aldol Condensate 1	1160	A, J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1530*			*ug/kg wet*	*2500.0*		*61*	*25-121*		
Surrogate: Phenol-d5	*1510*			*ug/kg wet*	*2500.0*		*60*	*24-113*		
Surrogate: Nitrobenzene-d5	*994*			*ug/kg wet*	*1666.7*		*60*	*23-120*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

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 L207153 - SW 3540C										
Blank (L207153-BLK1)				Prepared: 07/25/2012 Analyzed: 08/03/2012						
Surrogate: 2-Fluorobiphenyl	*990*			*ug/kg wet*	*1666.7*		*59*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1110*			*ug/kg wet*	*2500.0*		*45*	*19-122*		
Surrogate: p-Terphenyl-d14	*1260*			*ug/kg wet*	*1666.7*		*75*	*18-137*		
LCS (L207153-BS1)				Prepared: 07/25/2012 Analyzed: 08/03/2012						
1,2,4-Trichlorobenzene	1450		330	ug/kg wet	2000.0		73	45-110		
1,2-Dichlorobenzene	1430		330	ug/kg wet	2000.0		71	45-105		
1,3-Dichlorobenzene	1380		330	ug/kg wet	2000.0		69	40-100		
1,4-Dichlorobenzene	1400		330	ug/kg wet	2000.0		70	35-105		
2,4,5-Trichlorophenol	1780		330	ug/kg wet	2000.0		89	30-140		
2,4,6-Trichlorophenol	1370		330	ug/kg wet	2000.0		69	20-110		
2,4-Dichlorophenol	1550		330	ug/kg wet	2000.0		78	40-110		
2,4-Dimethylphenol	1380		330	ug/kg wet	2000.0		69	30-105		
2,4-Dinitrophenol	678	J	1650	ug/kg wet	2000.0		34	25-130		
2,4-Dinitrotoluene	1700		330	ug/kg wet	2000.0		85	50-115		
2,6-Dinitrotoluene	1700		330	ug/kg wet	2000.0		85	40-120		
2-Chloronaphthalene	1480		330	ug/kg wet	2000.0		74	45-115		
2-Chlorophenol	1460		330	ug/kg wet	2000.0		73	45-105		
2-Methylnaphthalene	1430		330	ug/kg wet	2000.0		72	45-110		
2-Methylphenol	1500		330	ug/kg wet	2000.0		75	40-120		
2-Nitroaniline	1730		1650	ug/kg wet	2000.0		86	45-120		
2-Nitrophenol	1400		330	ug/kg wet	2000.0		70	40-110		
3,3'-Dichlorobenzidine	1750		660	ug/kg wet	2000.0		88	15-130		
3-Nitroaniline	1990		1650	ug/kg wet	2000.0		99	40-130		
4,6-Dinitro-2-methylphenol	951		330	ug/kg wet	2000.0		48	20-140		
4-Bromophenyl Phenyl Ether	1650		330	ug/kg wet	2000.0		82	45-115		
4-Chloro-3-methylphenol	1770		330	ug/kg wet	2000.0		88	35-115		
4-Chloroaniline	1240		330	ug/kg wet	2000.0		62	10-100		
4-Chlorophenyl Phenyl Ether	1560		330	ug/kg wet	2000.0		78	45-110		
3- and/or 4-Methylphenol	1570		330	ug/kg wet	2000.0		78	40-120		
4-Nitroaniline	2100		1650	ug/kg wet	2000.0		105	40-130		
4-Nitrophenol	1570	J	1650	ug/kg wet	2000.0		79	15-140		
Acenaphthene	1490		330	ug/kg wet	2000.0		74	45-110		
Acenaphthylene	1280		330	ug/kg wet	2000.0		64	45-115		
Anthracene	1560		330	ug/kg wet	2000.0		78	45-130		
Benz[a]anthracene	1680		330	ug/kg wet	2000.0		84	45-130		
Benzo[a] pyrene	1730		330	ug/kg wet	2000.0		87	45-130		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

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 L207153 - SW 3540C										
LCS (L207153-BS1)				Prepared: 07/25/2012 Analyzed: 08/03/2012						
Benzo[b] fluoranthene	1720		330	ug/kg wet	2000.0		86	40-130		
Benzo[g,h,i] perylene	1850		330	ug/kg wet	2000.0		93	45-125		
Benzo[k] fluoranthene	1740		330	ug/kg wet	2000.0		87	45-125		
Bis(2-chloroethoxy) methane	1410		330	ug/kg wet	2000.0		70	45-110		
Bis(2-chloroethyl) ether	1370		330	ug/kg wet	2000.0		68	40-110		
Bis(2-chloroisopropyl) ether	1350		330	ug/kg wet	2000.0		68	30-115		
Bis(2-ethylhexyl) phthalate	1630		330	ug/kg wet	2000.0		82	40-145		
Butyl Benzyl Phthalate	1580		330	ug/kg wet	2000.0		79	50-125		
Carbazole	2190		330	ug/kg wet	2000.0		109	40-140		
Chrysene	1730		330	ug/kg wet	2000.0		86	45-130		
Dibenz[a,h]anthracene	1930		330	ug/kg wet	2000.0		96	45-125		
Dibenzofuran	1540		330	ug/kg wet	2000.0		77	45-120		
Diethyl Phthalate	1580		330	ug/kg wet	2000.0		79	50-125		
Dimethyl Phthalate	1520		330	ug/kg wet	2000.0		76	45-130		
Di-n-butyl Phthalate	1440		330	ug/kg wet	2000.0		72	50-130		
Di-n-octyl Phthalate	1640		330	ug/kg wet	2000.0		82	40-150		
Fluoranthene	1630		330	ug/kg wet	2000.0		82	45-130		
Fluorene	1560		330	ug/kg wet	2000.0		78	45-120		
Hexachlorobenzene	1670		330	ug/kg wet	2000.0		84	45-130		
Hexachlorobutadiene	1630		330	ug/kg wet	2000.0		81	45-105		
Hexachlorocyclopentadiene	452		330	ug/kg wet	2000.0		23	10-100		
Hexachloroethane	1380		330	ug/kg wet	2000.0		69	35-110		
Indeno[1,2,3-cd]pyrene	1880		330	ug/kg wet	2000.0		94	45-130		
Isophorone	1290		330	ug/kg wet	2000.0		64	40-110		
Naphthalene	1500		330	ug/kg wet	2000.0		75	40-110		
Nitrobenzene	1390		330	ug/kg wet	2000.0		70	40-105		
N-Nitrosodi-n-propylamine	1620		330	ug/kg wet	2000.0		81	30-130		
N-Nitrosodiphenylamine	1650		330	ug/kg wet	2000.0		82	50-120		
Pentachlorophenol	1300	J	1650	ug/kg wet	2000.0		65	25-120		
Phenanthrene	1590		330	ug/kg wet	2000.0		80	50-120		
Phenol	1470		330	ug/kg wet	2000.0		74	40-115		
Pyrene	1570		330	ug/kg wet	2000.0		78	45-125		
Surrogate: 2-Fluorophenol	*2000*			*ug/kg wet*	*2500.0*		*80*	*25-121*		
Surrogate: Phenol-d5	*1900*			*ug/kg wet*	*2500.0*		*76*	*24-113*		
Surrogate: Nitrobenzene-d5	*1300*			*ug/kg wet*	*1666.7*		*78*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1310*			*ug/kg wet*	*1666.7*		*79*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1880*			*ug/kg wet*	*2500.0*		*75*	*19-122*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

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 L207153 - SW 3540C										
LCS (L207153-BS1)				Prepared: 07/25/2012 Analyzed: 08/03/2012						
Surrogate: p-Terphenyl-d14	*1390*			*ug/kg wet*	*1666.7*		*83*	*18-137*		
Matrix Spike (L207153-MS3)		**Source: 1207054-01**		Prepared: 07/25/2012 Analyzed: 08/01/2012						
1,2,4-Trichlorobenzene	9380	D		ug/kg wet	9630.8	84900 U	97	45-110		
1,2-Dichlorobenzene	13200	D		ug/kg wet	9630.8	84900 U	138*	45-105		
1,3-Dichlorobenzene	9260	D		ug/kg wet	9630.8	84900 U	96	40-100		
1,4-Dichlorobenzene	9670	D		ug/kg wet	9630.8	84900 U	100	35-105		
2,4,5-Trichlorophenol	10700	D		ug/kg wet	9630.8	84900 U	111	30-140		
2,4,6-Trichlorophenol	9640	D		ug/kg wet	9630.8	84900 U	100	20-110		
2,4-Dichlorophenol	10300	D		ug/kg wet	9630.8	84900 U	107	40-110		
2,4-Dimethylphenol	4640	D		ug/kg wet	9630.8	84900 U	48	30-105		
2,4-Dinitrophenol	0.00	U		ug/kg wet	9630.8	425000 U	*	25-130		
2,4-Dinitrotoluene	12200	D		ug/kg wet	9630.8	84900 U	126*	50-115		
2,6-Dinitrotoluene	12200	D		ug/kg wet	9630.8	84900 U	126*	40-120		
2-Chloronaphthalene	9570	D		ug/kg wet	9630.8	84900 U	99	45-115		
2-Chlorophenol	9850	D		ug/kg wet	9630.8	84900 U	102	45-105		
2-Methylnaphthalene	24900	D		ug/kg wet	9630.8	84900 U	258*	45-110		
2-Methylphenol	7570	D		ug/kg wet	9630.8	84900 U	79	40-120		
2-Nitroaniline	8230	D		ug/kg wet	9630.8	425000 U	85	45-120		
2-Nitrophenol	6450	D		ug/kg wet	9630.8	84900 U	67	40-110		
3,3'-Dichlorobenzidine	0.00	U		ug/kg wet	9630.8	170000 U	*	15-130		
3-Nitroaniline	0.00	U		ug/kg wet	9630.8	425000 U	*	40-130		
4,6-Dinitro-2-methylphenol	0.00	U		ug/kg wet	9630.8	84900 U	*	20-140		
4-Bromophenyl Phenyl Ether	10300	D		ug/kg wet	9630.8	84900 U	107	45-115		
4-Chloro-3-methylphenol	9750	D		ug/kg wet	9630.8	84900 U	101	35-115		
4-Chloroaniline	0.00	U		ug/kg wet	9630.8	84900 U	*	10-100		
4-Chlorophenyl Phenyl Ether	9950	D		ug/kg wet	9630.8	84900 U	103	45-110		
3- and/or 4-Methylphenol	7670	D		ug/kg wet	9630.8	84900 U	80	40-120		
4-Nitroaniline	0.00	U		ug/kg wet	9630.8	425000 U	*	40-130		
4-Nitrophenol	11000	D		ug/kg wet	9630.8	425000 U	114	15-140		
Acenaphthene	9670	D		ug/kg wet	9630.8	84900 U	100	45-110		
Acenaphthylene	6820	D		ug/kg wet	9630.8	84900 U	71	45-115		
Anthracene	10300	D		ug/kg wet	9630.8	84900 U	107	45-130		
Benz[a]anthracene	10900	D		ug/kg wet	9630.8	84900 U	114	45-130		
Benzo[a] pyrene	10900	D		ug/kg wet	9630.8	84900 U	114	45-130		
Benzo[b] fluoranthene	10300	D		ug/kg wet	9630.8	84900 U	107	40-130		
Benzo[g,h,i] perylene	8300	D		ug/kg wet	9630.8	84900 U	86	45-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/15/2012 08:52

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 L207153 - SW 3540C										
Matrix Spike (L207153-MS3)		**Source: 1207054-01**		Prepared: 07/25/2012 Analyzed: 08/01/2012						
Benzo[k] fluoranthene	10400	D		ug/kg wet	9630.8	84900 U	108	45-125		
Bis(2-chloroethoxy) methane	11700	D		ug/kg wet	9630.8	84900 U	121*	45-110		
Bis(2-chloroethyl) ether	12100	D		ug/kg wet	9630.8	84900 U	125*	40-110		
Bis(2-chloroisopropyl) ether	22100	D		ug/kg wet	9630.8	84900 U	229*	30-115		
Bis(2-ethylhexyl) phthalate	13200	D		ug/kg wet	9630.8	84900 U	137	40-145		
Butyl Benzyl Phthalate	37800	D		ug/kg wet	9630.8	84900 U	392*	50-125		
Carbazole	15700	D		ug/kg wet	9630.8	84900 U	163*	40-140		
Chrysene	10500	D		ug/kg wet	9630.8	84900 U	109	45-130		
Dibenz[a,h]anthracene	8840	D		ug/kg wet	9630.8	84900 U	92	45-125		
Dibenzofuran	10700	D		ug/kg wet	9630.8	84900 U	111	45-120		
Diethyl Phthalate	11100	D		ug/kg wet	9630.8	84900 U	115	50-125		
Dimethyl Phthalate	10400	D		ug/kg wet	9630.8	84900 U	108	45-130		
Di-n-butyl Phthalate	11500	D		ug/kg wet	9630.8	84900 U	120	50-130		
Di-n-octyl Phthalate	13300	D		ug/kg wet	9630.8	84900 U	138	40-150		
Fluoranthene	10400	D		ug/kg wet	9630.8	84900 U	108	45-130		
Fluorene	11100	D		ug/kg wet	9630.8	84900 U	115	45-120		
Hexachlorobenzene	7780	D		ug/kg wet	9630.8	84900 U	81	45-130		
Hexachlorobutadiene	8780	D		ug/kg wet	9630.8	84900 U	91	45-105		
Hexachlorocyclopentadiene	0.00	U		ug/kg wet	9630.8	84900 U	*	10-100		
Hexachloroethane	8630	D		ug/kg wet	9630.8	84900 U	90	35-110		
Indeno[1,2,3-cd]pyrene	8160	D		ug/kg wet	9630.8	84900 U	85	45-130		
Isophorone	10300	D		ug/kg wet	9630.8	84900 U	107	40-110		
Naphthalene	36400	D		ug/kg wet	9630.8	15600	216*	40-110		
Nitrobenzene	14800	D		ug/kg wet	9630.8	84900 U	153*	40-105		
N-Nitrosodi-n-propylamine	18200	D		ug/kg wet	9630.8	84900 U	189*	30-130		
N-Nitrosodiphenylamine	10500	D		ug/kg wet	9630.8	84900 U	109	50-120		
Pentachlorophenol	11300	D		ug/kg wet	9630.8	425000 U	118	25-120		
Phenanthrene	11200	D		ug/kg wet	9630.8	84900 U	117	50-120		
Phenol	11200	D		ug/kg wet	9630.8	84900 U	117*	40-115		
Pyrene	11100	D		ug/kg wet	9630.8	84900 U	115	45-125		
Surrogate: 2-Fluorophenol	*14100*			*ug/kg wet*	*12039*		*117*	*25-121*		
Surrogate: Phenol-d5	*13600*			*ug/kg wet*	*12039*		*113*	*24-113*		
Surrogate: Nitrobenzene-d5	*11100*			*ug/kg wet*	*8025.7*		*138**	*23-120*		
Surrogate: 2-Fluorobiphenyl	*9170*			*ug/kg wet*	*8025.7*		*114*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*9720*			*ug/kg wet*	*12039*		*81*	*19-122*		
Surrogate: p-Terphenyl-d14	*9810*			*ug/kg wet*	*8025.7*		*122*	*18-137*		

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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 L207153 - SW 3540C										
Matrix Spike Dup (L207153-MSD3)		**Source: 1207054-01**		Prepared: 07/25/2012 Analyzed: 08/01/2012						
1,2,4-Trichlorobenzene	10700	D		ug/kg wet	10638	84900 U	101	45-110	3	40
1,2-Dichlorobenzene	14600	D		ug/kg wet	10638	84900 U	137*	45-105	0.2	40
1,3-Dichlorobenzene	10200	D		ug/kg wet	10638	84900 U	96	40-100	0.3	40
1,4-Dichlorobenzene	10300	D		ug/kg wet	10638	84900 U	97	35-105	4	40
2,4,5-Trichlorophenol	11900	D		ug/kg wet	10638	84900 U	112	30-140	0.8	40
2,4,6-Trichlorophenol	10500	D		ug/kg wet	10638	84900 U	98	20-110	2	40
2,4-Dichlorophenol	10800	D		ug/kg wet	10638	84900 U	102	40-110	5	40
2,4-Dimethylphenol	3260	D		ug/kg wet	10638	84900 U	31	30-105	44*	40
2,4-Dinitrophenol	1040	D		ug/kg wet	10638	425000 U	10*	25-130		40
2,4-Dinitrotoluene	12500	D		ug/kg wet	10638	84900 U	117*	50-115	7	40
2,6-Dinitrotoluene	12500	D		ug/kg wet	10638	84900 U	117	40-120	7	40
2-Chloronaphthalene	10500	D		ug/kg wet	10638	84900 U	99	45-115	0.8	40
2-Chlorophenol	10400	D		ug/kg wet	10638	84900 U	98	45-105	4	40
2-Methylnaphthalene	25000	D		ug/kg wet	10638	84900 U	235*	45-110	9	40
2-Methylphenol	7090	D		ug/kg wet	10638	84900 U	67	40-120	16	40
2-Nitroaniline	9150	D		ug/kg wet	10638	425000 U	86	45-120	0.6	40
2-Nitrophenol	6130	D		ug/kg wet	10638	84900 U	58	40-110	15	40
3,3'-Dichlorobenzidine	0.00	U		ug/kg wet	10638	170000 U	*	15-130		40
3-Nitroaniline	0.00	U		ug/kg wet	10638	425000 U	*	40-130		40
4,6-Dinitro-2-methylphenol	0.00	U		ug/kg wet	10638	84900 U	*	20-140		40
4-Bromophenyl Phenyl Ether	10600	D		ug/kg wet	10638	84900 U	100	45-115	7	40
4-Chloro-3-methylphenol	9050	D		ug/kg wet	10638	84900 U	85	35-115	17	40
4-Chloroaniline	0.00	U		ug/kg wet	10638	84900 U	*	10-100		40
4-Chlorophenyl Phenyl Ether	10800	D		ug/kg wet	10638	84900 U	101	45-110	2	40
3- and/or 4-Methylphenol	6820	D		ug/kg wet	10638	84900 U	64	40-120	22	40
4-Nitroaniline	0.00	U		ug/kg wet	10638	425000 U	*	40-130		40
4-Nitrophenol	7520	D		ug/kg wet	10638	425000 U	71	15-140	47*	40
Acenaphthene	11000	D		ug/kg wet	10638	84900 U	104	45-110	3	40
Acenaphthylene	7540	D		ug/kg wet	10638	84900 U	71	45-115	0.008	40
Anthracene	11300	D		ug/kg wet	10638	84900 U	106	45-130	0.5	40
Benz[a]anthracene	11000	D		ug/kg wet	10638	84900 U	104	45-130	9	40
Benzo[a] pyrene	10500	D		ug/kg wet	10638	84900 U	99	45-130	14	40
Benzo[b] fluoranthene	11500	D		ug/kg wet	10638	84900 U	108	40-130	1	40
Benzo[g,h,i] perylene	9350	D		ug/kg wet	10638	84900 U	88	45-125	2	40
Benzo[k] fluoranthene	10600	D		ug/kg wet	10638	84900 U	99	45-125	8	40
Bis(2-chloroethoxy) methane	12500	D		ug/kg wet	10638	84900 U	117*	45-110	3	40

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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 L207153 - SW 3540C										
Matrix Spike Dup (L207153-MSD3)		**Source: 1207054-01**		Prepared: 07/25/2012 Analyzed: 08/01/2012						
Bis(2-chloroethyl) ether	13600	D		ug/kg wet	10638	84900 U	128*	40-110	2	40
Bis(2-chloroisopropyl) ether	26000	D		ug/kg wet	10638	84900 U	245*	30-115	7	40
Bis(2-ethylhexyl) phthalate	14400	D		ug/kg wet	10638	84900 U	136	40-145	1	40
Butyl Benzyl Phthalate	47500	D		ug/kg wet	10638	84900 U	446*	50-125	13	40
Carbazole	16800	D		ug/kg wet	10638	84900 U	158*	40-140	3	40
Chrysene	11100	D		ug/kg wet	10638	84900 U	104	45-130	5	40
Dibenz[a,h]anthracene	10200	D		ug/kg wet	10638	84900 U	96	45-125	5	40
Dibenzofuran	12200	D		ug/kg wet	10638	84900 U	115	45-120	3	40
Diethyl Phthalate	12200	D		ug/kg wet	10638	84900 U	114	50-125	0.5	40
Dimethyl Phthalate	11200	D		ug/kg wet	10638	84900 U	106	45-130	2	40
Di-n-butyl Phthalate	12100	D		ug/kg wet	10638	84900 U	114	50-130	5	40
Di-n-octyl Phthalate	13900	D		ug/kg wet	10638	84900 U	131	40-150	5	40
Fluoranthene	11400	D		ug/kg wet	10638	84900 U	107	45-130	0.7	40
Fluorene	12400	D		ug/kg wet	10638	84900 U	117	45-120	1	40
Hexachlorobenzene	8460	D		ug/kg wet	10638	84900 U	79	45-130	2	40
Hexachlorobutadiene	10100	D		ug/kg wet	10638	84900 U	95	45-105	4	40
Hexachlorocyclopentadiene	0.00	U		ug/kg wet	10638	84900 U	*	10-100		40
Hexachloroethane	8590	D		ug/kg wet	10638	84900 U	81	35-110	10	40
Indeno[1,2,3-cd]pyrene	8780	D		ug/kg wet	10638	84900 U	83	45-130	3	40
Isophorone	11300	D		ug/kg wet	10638	84900 U	106	40-110	1	40
Naphthalene	33600	D		ug/kg wet	10638	15600	170*	40-110	24	40
Nitrobenzene	17000	D		ug/kg wet	10638	84900 U	160*	40-105	4	40
N-Nitrosodi-n-propylamine	18600	D		ug/kg wet	10638	84900 U	175*	30-130	8	40
N-Nitrosodiphenylamine	10900	D		ug/kg wet	10638	84900 U	102	50-120	6	40
Pentachlorophenol	11000	D		ug/kg wet	10638	425000 U	103	25-120	13	40
Phenanthrene	12600	D		ug/kg wet	10638	84900 U	118	50-120	1	40
Phenol	12900	D		ug/kg wet	10638	84900 U	122*	40-115	4	40
Pyrene	12000	D		ug/kg wet	10638	84900 U	113	45-125	2	40
Surrogate: 2-Fluorophenol	*13900*			*ug/kg wet*	*13298*		*105*	*25-121*		
Surrogate: Phenol-d5	*15400*			*ug/kg wet*	*13298*		*115**	*24-113*		
Surrogate: Nitrobenzene-d5	*11000*			*ug/kg wet*	*8865.2*		*124**	*23-120*		
Surrogate: 2-Fluorobiphenyl	*9870*			*ug/kg wet*	*8865.2*		*111*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*11300*			*ug/kg wet*	*13298*		*85*	*19-122*		
Surrogate: p-Terphenyl-d14	*10300*			*ug/kg wet*	*8865.2*		*117*	*18-137*		

PREPARATION BENCH SHEET

L207153

Lionville Laboratory

Printed: 7/26/2012 11:35:40AM

000000051

Matrix: Solid **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1200845**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1207051-01	8270C TCL SVOC	07/25/2012 14:23	31	1				500	WC-Hanford, Inc.	
1207051-02	8270C TCL SVOC	07/25/2012 14:23	30	1				500	WC-Hanford, Inc.	
1207051-03	8270C TCL SVOC	07/25/2012 14:23	29.63	1				500	WC-Hanford, Inc.	
1207051-04	8270C TCL SVOC	07/25/2012 14:23	30.56	1				500	WC-Hanford, Inc.	
1207051-05	8270C TCL SVOC	07/25/2012 14:23	30.48	1				500	WC-Hanford, Inc.	
1207051-06	8270C TCL SVOC	07/25/2012 14:23	30.5	1				500	WC-Hanford, Inc.	
1207053-01	8270C TCL SVOC	07/25/2012 14:23	5.41	10				500	ANR Pipeline	
1207054-01	8270C TCL SVOC	07/25/2012 14:23	5.83	10				500	WC-Hanford, Inc.	
L207153-BLK1	QC	07/25/2012 14:23	30	1				500		
L207153-BS1	QC	07/25/2012 14:23	30	1	1200337		600	500		
L207153-MS1	QC	07/25/2012 14:23	30.67	1	1200337	1207051-01	600	500		
L207153-MS2	QC	07/25/2012 14:23	5.74	10	1200337	1207053-01	600	500		
L207153-MS3	QC	07/25/2012 14:23	6.23	10	1200337	1207054-01	600	500		
L207153-MSD1	QC	07/25/2012 14:23	31.12	1	1200337	1207051-01	600	500		
L207153-MSD2	QC	07/25/2012 14:23	6.84	10	1200337	1207053-01	600	500		
L207153-MSD3	QC	07/25/2012 14:23	5.64	10	1200337	1207054-01	600	500		

Extracts Relinquished By 7/26/12 1135 Date

Extracts Received By 7/26/12 1150 Date

PCBS

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: K3959 Project Manager: Joan Kessner	**Reported:** 08/14/2012 20:05

Analytical Report for Polychlorinated Biphenyls by SW846 8082

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PW65	1207054-01	Other Solid	07/23/2012 14:40	07/25/2012 10:10

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 K3959
LVL #: 1207054

W.O. #: 60049-001-001-0001-00
Received: 07-25-2012

PCBs

One (1) other solid sample was collected on 07-23-2012.

The sample and associated QC samples were extracted 08-02-2012 and analyzed 08-13,14-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

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. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The sample was extracted at a reduced initial volume due to the matrix. Reporting limits have been adjusted to reflect this change.
8. The sample was reported on a wet weight 'as received' basis.
9. All initial calibrations associated with this data set were within acceptance criteria.
10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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 pages.

11. 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 data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

8/15/12
Date

GLOSSARY OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration 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.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.
P	=	This flag is used for a dual column analysis (i.e. pesticides/PCB/herbicides) when there is greater than 40% difference for detected concentrations between the two GC columns; the lower of the two values is reported on Form 1 and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
NPM	=	No pattern match for multi-component target analytes.

Lionville Laboratory Use Only

1207054

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

000000057

Client W.C. Hanford SAF# RC-150
Est. Final Proj. Sampling Date
Project#
Project Contact/Phone#
Lionville Laboratory Project Manager Alletta Johnson
QC SW Del Std TAT 21 days

Date Rec'd 7-25-12 Date Due 8-15-12

		A														
Refrigerator #		1														
#/Type Container	Liquid															
	Solid	1pl														
Volume	Liquid															
	Solid	1L														
Preservatives		—														
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb	PAHs 8310			(1) Metal + HS	CN	(2) TCLP Metals + Hg					
		Lionville Laboratory Use Only														
		8260	8270	8082		8310			6010 Metals/Hg		TCLP Metals/Hg					

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	PCB	Herb	PAHs			Metal	CN	TCLP					
01	JIPW65	✓	✓	SO	7-23-12	1440	X	X	X		X			X		X					

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

Special Instructions:
(1) Met = HSL + B, Li, Mo, Sr, U, Zr (no TL)

er Client Matrix consists of clay pipe + liner aterial single + report as single unit

Special Instructions:
1. 7/25/12 (2) TCLP Metals Analysis - Leach and Hold until further direction is provided.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	7-25-12	10:10

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-150-025	Page 1 of ~~2~~ 1

Collector M. Simonds	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code 9L	Data Turnaround 21 Days		
Project Designation 300 Area D4 Waste Sites - Other	Sampling Location 300 - 15 [Process Sewer] Pipe Coupon		SAF No. RC-150
Ice Chest No. ~~N/A~~ AJ 7-24-12 WCH-11-026	Field Logbook No. EL-1663-~~02~~ 03 7/23/12	COA R300152600	Method of Shipment Fed Ex/Hand Deliver
Shipped To ~~EDERLINE SERVICES~~ LIONVILLE 7/23/12	Offsite Property No. ~~N/A~~ AJ 7-24-12 A110471		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive

Special Handling and/or Storage

Cool 4C
7/23/12
* ONE 1-L POLY CONTAINER IS PROVIDED & INTENDED TO SUPPLY ENOUGH MATERIAL FOR ALL SAMPLE ANALYSIS REQUESTED.

SAMPLE ANALYSIS											
Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	None
Type of Container	G/P	aG AJ 7-24-12	G	aG	aG	aG	G/P	G/P	G/P	G/P
No. of Container(s)	1	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	~~1~~ 0	1	1	1	1
Volume	~~60mL~~ 1000 ml	AJ 7-24-12 120mL	60mL	60mL	60mL	125mL	500mL	60mL	60mL	60mL
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	PCBs - 8082	PAHs - 8310	See item (3) in Special Instructions.	Isotopic Uranium	Isotopic Plutonium	Americium-241/Curium-244

Sample No.	Matrix *	Sample Date	Sample Time										
										RCF			
J1PW65	OTHER	7/23/12	1440	✓	✓	✓	✓	✓	✓	34018			
~~J1PW66~~	~~OTHER~~	AJ 7-24-12											

REVIEWED BY KW DATE 7/24/12

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MIRANDA SIMONDS	7/23/12 1615	DAVID BECKER	7/23/12 1615
DAVID BECKER	7/23/12 1645	1060, 2A *	7/23/12 1645
1060#2	7-24-12 0610 A. Freier	A. Freier	7-24-12 0610
A. Freier	WCH 7-24-12 1310	Fed Ex	
Fed Ex	7-25-12 10:10		7-25-12 10:10

Sign/Print Names

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, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Uranium, 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} 7/23/12

PIPE COUPON SAMPLE CONSISTS OF VITRIFIED CLAY PIPE & PIPE LINER MATERIAL FROM PIPE INTERIOR; ANALYZE & REPORT RESULTS AS SINGLE UNIT. 7/23/12

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

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

* Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

WCH-EE-011

000000058

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford
Project/SAF/SOW/Release #: RC-150

Date: 7-25-12

LvL Batch #: 1207054

Sample Custodian: [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7938 2660 2155
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 5.3	°C	Cooler # WCH-11-026
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 _____

SR-002-B.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: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/14/2012 20:05

J1PW65
1207054-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1221	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1232	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1242	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1248	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1254	**12.6**	J	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1260	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1262	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Aroclor 1268	23.9	U	23.9	ug/kg wet	1	L208016	08/02/2012	08/14/2012	8082
Surrogate: Decachlorobiphenyl	*69 %*		*43-144*			*L208016*	*08/02/2012*	*08/14/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*67 %*		*52-141*			*L208016*	*08/02/2012*	*08/14/2012*	*8082*

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: K3959 Project Manager: Joan Kessner	**Reported:** 08/14/2012 20:05

Polychlorinated Biphenyls by SW846 8082 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L208016 - SW 3540C										
Blank (L208016-BLK1)				Prepared: 08/02/2012 Analyzed: 08/13/2012						
Aroclor 1016	13.3	U	13.3	ug/kg wet						
Aroclor 1221	13.3	U	13.3	ug/kg wet						
Aroclor 1232	13.3	U	13.3	ug/kg wet						
Aroclor 1242	13.3	U	13.3	ug/kg wet						
Aroclor 1248	13.3	U	13.3	ug/kg wet						
Aroclor 1254	13.3	U	13.3	ug/kg wet						
Aroclor 1260	13.3	U	13.3	ug/kg wet						
Aroclor 1262	13.3	U	13.3	ug/kg wet						
Aroclor 1268	13.3	U	13.3	ug/kg wet						
Surrogate: Decachlorobiphenyl	*33.6*			*ug/kg wet*	*33.333*		*101*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*30.5*			*ug/kg wet*	*33.337*		*91*	*52-141*		
LCS (L208016-BS1)				Prepared: 08/02/2012 Analyzed: 08/13/2012						
Aroclor 1016	131		13.3	ug/kg wet	166.67		79	50-138		
Aroclor 1260	150		13.3	ug/kg wet	166.67		90	50-148		
Surrogate: Decachlorobiphenyl	*33.9*			*ug/kg wet*	*33.333*		*102*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*29.4*			*ug/kg wet*	*33.337*		*88*	*52-141*		
Matrix Spike (L208016-MS2)		**Source: 1207054-01**		Prepared: 08/02/2012 Analyzed: 08/14/2012						
Aroclor 1016	208		25.5	ug/kg wet	320.10	23.9 U	65	50-138		
Aroclor 1260	220		25.5	ug/kg wet	320.10	23.9 U	69	50-148		
Surrogate: Decachlorobiphenyl	*46.4*			*ug/kg wet*	*64.020*		*72*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*48.4*			*ug/kg wet*	*64.027*		*76*	*52-141*		
Matrix Spike Dup (L208016-MSD2)		**Source: 1207054-01**		Prepared: 08/02/2012 Analyzed: 08/14/2012						
Aroclor 1016	229		23.1	ug/kg wet	289.18	23.9 U	79	50-138	20	40
Aroclor 1260	224		23.1	ug/kg wet	289.18	23.9 U	78	50-148	12	40
Surrogate: Decachlorobiphenyl	*44.3*			*ug/kg wet*	*57.837*		*77*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*46.7*			*ug/kg wet*	*57.843*		*81*	*52-141*		

PREPARATION BENCH SHEET

L208016

Lionville Laboratory

Printed: 8/3/2012 3:20:52PM

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1200502

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1207052-01	8081A TCL Pesticides	08/02/2012 16:31	15.17	10				250	Navarro Research & Engineering, Inc.	Added for BatchQC in: L208016
1207052-01	8082 PCBs	08/02/2012 16:31	15.17	10				250	Navarro Research & Engineering, Inc.	
1207052-02	8082 PCBs	08/02/2012 16:31	15.47	10				250	Navarro Research & Engineering, Inc.	
1207053-01	8082 PCBs	08/02/2012 16:31	9.43	10				250	ANR Pipeline	
1207054-01	8081A TCL Pesticides	08/02/2012 16:31	16.72	10				250	WC-Hanford, Inc.	Added for BatchQC in: L208016
1207054-01	8082 PCBs	08/02/2012 16:31	16.72	10				250	WC-Hanford, Inc.	
1208001-01	8081A TCL Pesticides	08/02/2012 16:31	30.89	10				250	WC-Hanford, Inc.	Added for BatchQC in: L208016
1208001-01	8082 PCBs	08/02/2012 16:31	30.89	10				250	WC-Hanford, Inc.	
1208001-02	8082 PCBs	08/02/2012 16:31	30.2	10				250	WC-Hanford, Inc.	
1208001-03	8082 PCBs	08/02/2012 16:31	30.71	10				250	WC-Hanford, Inc.	
1208007-01	8081A TCL Pesticides	08/02/2012 16:31	30.99	10				250	WC-Hanford, Inc.	Added for BatchQC in: L208016
1208007-01	8082 PCBs	08/02/2012 16:31	30.99	10				250	WC-Hanford, Inc.	
1208008-01	8081A TCL Pesticides	08/02/2012 16:31	30.51	10				250	WC-Hanford, Inc.	
1208008-01	8082 PCBs	08/02/2012 16:31	30.51	10				250	WC-Hanford, Inc.	
L208016-BLK1	QC	08/02/2012 16:31	30	10				250		PCB
L208016-BLK2	QC	08/02/2012 16:31	30	10				250		pest
L208016-BS1	QC	08/02/2012 16:31	30	10	1200902		250	250		PCB
L208016-BS2	QC	08/02/2012 16:31	30	10	1200903		250	250		pest
L208016-MS1	QC	08/02/2012 16:31	15.97	10	1200902	1207052-01	250	250		PCB
L208016-MS2	QC	08/02/2012 16:31	15.62	10	1200902	1207054-01	250	250		PCB

Extracts Relinquished By — Date 8/3/12 1550

Extracts Received By — Date 8-3-12

PREPARATION BENCH SHEET

L208016

Lionville Laboratory

Printed: 8/3/2012 3:20:52PM

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200502**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L208016-MS3	QC	08/02/2012 16:31	30.7	10	1200902	1208001-01	250	250		PCB
L208016-MS4	QC	08/02/2012 16:31	30.12	10	1200902	1208007-01	250	250		PCB
L208016-MS5	QC	08/02/2012 16:31	30.5	10	1200902	1208008-01	250	250		PCB
L208016-MS6	QC	08/02/2012 16:31	30.28	10	1200903	1208008-01	250	250		pest
L208016-MSD1	QC	08/02/2012 16:31	15.83	10	1200902	1207052-01	250	250		PCB
L208016-MSD2	QC	08/02/2012 16:31	17.29	10	1200902	1207054-01	250	250		PCB
L208016-MSD3	QC	08/02/2012 16:31	30.11	10	1200902	1208001-01	250	250		PCB
L208016-MSD4	QC	08/02/2012 16:31	30.47	10	1200902	1208007-01	250	250		PCB
L208016-MSD5	QC	08/02/2012 16:31	31.99	10	1200902	1208008-01	250	250		PCB
L208016-MSD6	QC	08/02/2012 16:31	30.17	10	1200903	1208008-01	250	250		pest

S cleaned 8-6-12 LK

Cu Lot#G16W031

1550

Extracts Relinquished By 8/3/12 Date

LK 8-3-12

Extracts Received By Date

PAHs

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: K3959 Project Manager: Joan Kessner	**Reported:** 08/05/2012 07:14

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PW65	1207054-01	Other Solid	07/23/2012 14:40	07/25/2012 10:10

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
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Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-150 K3959
LVL #: 1207054

W.O. #: 60049-001-001-0001-00
Date Received: 07-25-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) other solid sample was collected on 07-23-2012.

The sample and associated QC samples were extracted 07-31-2012 and analyzed 08-01,02-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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. All required holding times for extraction and analysis have been met.

3. Three (3) of five (5) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) # 12GC124 has been enclosed.

4. The method blank was below the reporting limits for all target compounds.

5. All blank spike recoveries were within acceptance criteria.

6. All samples required 1000-fold dilutions due to high concentrations of target analytes. The data user should be cautious in the use of this data, due to the apparent non-homogeneity of this sample, as well as a possibility of positive interference for a number of analytes (especially acenaphthene). These relatively high, observed levels should be assessed in conjunction with the method 8270 data provided for this SDG.

7. Thirty-one (31) of thirty-two (32) matrix spike recoveries were outside acceptance criteria. A copy of the SDR# 12GC124 has been enclosed.

8. The initial calibrations associated with this data set were within acceptance criteria.

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

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

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 pages.

11. 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
LvL Laboratory Manager

8/7/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC124

Initiator: Catherine Carey
Date: 08/05/12
Client: WC Hanford

Batch: 1207054
Samples: 01 + MS1, MSD1
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: SOLID
Prep Batch: L207203

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)

surrogate recovery outside QC limits for samples 01, MS1, + MSD1

All spike recoveries outside QC limits in MS1/MSD1

2. Known or Probable Causes(s)

high concentration of target analytes

Extreme non homogeneity also.

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)

Narrate, D

4. Project Manager Instructions...signature/date: 8/7/12

__ 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: 8/7/12 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 OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration 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.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.
P	=	This flag is used for a dual column analysis (i.e. pesticides/PCB/herbicides) when there is greater than 40% difference for detected concentrations between the two GC columns; the lower of the two values is reported on Form 1 and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
NPM	=	No pattern match for multi-component target analytes.

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/05/2012 07:14

J1PW65
1207054-01 (Other Solid)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**9140**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Acenaphthylene	3550	U	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Acenaphthene	**521000**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Fluorene	**57300**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Phenanthrene	**9200**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Anthracene	3550	U	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Fluoranthene	**13100**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Indeno[1,2,3-cd]pyrene	**1310**	J, D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Pyrene	**9730**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Benz[a]anthracene	**3520**	J, D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Chrysene	**4960**	D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Benzo[b] fluoranthene	**2330**	J, D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Benzo[k] fluoranthene	**1190**	J, D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Benzo[a] pyrene	**3310**	J, D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Dibenz[a,h]anthracene	3550	U	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Benzo[g,h,i] perylene	**2890**	J, D	3550	ug/kg wet	1000	L207203	07/31/2012	08/02/2012	8310
Surrogate: Triphenylene	*633 % **		*68-129*			*L207203*	*07/31/2012*	*08/02/2012*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/05/2012 07:14

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207203 - SW 3540C										
Blank (L207203-BLK1)				Prepared: 07/31/2012 Analyzed: 08/01/2012						
Naphthalene	3.33	U	3.33	ug/kg wet						
Acenaphthylene	3.33	U	3.33	ug/kg wet						
Acenaphthene	3.33	U	3.33	ug/kg wet						
Fluorene	3.33	U	3.33	ug/kg wet						
Phenanthrene	3.33	U	3.33	ug/kg wet						
Anthracene	3.33	U	3.33	ug/kg wet						
Fluoranthene	3.33	U	3.33	ug/kg wet						
Indeno[1,2,3-cd]pyrene	3.33	U	3.33	ug/kg wet						
Pyrene	3.33	U	3.33	ug/kg wet						
Benz[a]anthracene	3.33	U	3.33	ug/kg wet						
Chrysene	3.33	U	3.33	ug/kg wet						
Benzo[b] fluoranthene	3.33	U	3.33	ug/kg wet						
Benzo[k] fluoranthene	3.33	U	3.33	ug/kg wet						
Benzo[a] pyrene	3.33	U	3.33	ug/kg wet						
Dibenz[a,h]anthracene	3.33	U	3.33	ug/kg wet						
Benzo[g,h,i] perylene	3.33	U	3.33	ug/kg wet						
Surrogate: Triphenylene	*183*			*ug/kg wet*	*166.67*		*110*	*68-129*		
LCS (L207203-BS1)				Prepared: 07/31/2012 Analyzed: 08/01/2012						
Naphthalene	137		3.33	ug/kg wet	166.67		82	0-127		
Acenaphthylene	144		3.33	ug/kg wet	166.67		86	50-140		
Acenaphthene	150		3.33	ug/kg wet	166.67		90	17-139		
Fluorene	150		3.33	ug/kg wet	166.67		90	28-145		
Phenanthrene	152		3.33	ug/kg wet	166.67		91	30-152		
Anthracene	155		3.33	ug/kg wet	166.67		93	19-171		
Fluoranthene	156		3.33	ug/kg wet	166.67		94	34-159		
Indeno[1,2,3-cd]pyrene	157		3.33	ug/kg wet	166.67		94	31-156		
Pyrene	154		3.33	ug/kg wet	166.67		93	33-152		
Benz[a]anthracene	158		3.33	ug/kg wet	166.67		95	32-157		
Chrysene	152		3.33	ug/kg wet	166.67		91	31-159		
Benzo[b] fluoranthene	162		3.33	ug/kg wet	166.67		97	33-164		
Benzo[k] fluoranthene	160		3.33	ug/kg wet	166.67		96	28-161		
Benzo[a] pyrene	167		3.33	ug/kg wet	166.67		100	29-149		
Dibenz[a,h]anthracene	163		3.33	ug/kg wet	166.67		98	27-153		
Benzo[g,h,i] perylene	164		3.33	ug/kg wet	166.67		98	32-157		
Surrogate: Triphenylene	*180*			*ug/kg wet*	*166.67*		*108*	*68-129*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/05/2012 07:14

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207203 - SW 3540C										
Matrix Spike (L207203-MS1)		**Source: 1207054-01**		Prepared: 07/31/2012 Analyzed: 08/02/2012						
Naphthalene	8690	D	3820	ug/kg wet	191.06	9140	-240*	0-127		
Acenaphthylene	84200	D	3820	ug/kg wet	191.06	3550 U	44100*	50-140		
Acenaphthene	392000	D	3820	ug/kg wet	191.06	521000	-67100*	17-139		
Fluorene	87300	D	3820	ug/kg wet	191.06	57300	15700*	28-145		
Phenanthrene	4930	D	3820	ug/kg wet	191.06	9200	-2230*	30-152		
Anthracene	3820	U	3820	ug/kg wet	191.06	3550 U	*	19-171		
Fluoranthene	11600	D	3820	ug/kg wet	191.06	13100	-780*	34-159		
Indeno[1,2,3-cd]pyrene	1470	J, D	3820	ug/kg wet	191.06	1310	82	31-156		
Pyrene	6860	D	3820	ug/kg wet	191.06	9730	-1500*	33-152		
Benz[a]anthracene	2720	J, D	3820	ug/kg wet	191.06	3520	-420*	32-157		
Chrysene	3740	J, D	3820	ug/kg wet	191.06	4960	-634*	31-159		
Benzo[b] fluoranthene	1870	J, D	3820	ug/kg wet	191.06	2330	-241*	33-164		
Benzo[k] fluoranthene	1030	J, D	3820	ug/kg wet	191.06	1190	-86*	28-161		
Benzo[a] pyrene	3020	J, D	3820	ug/kg wet	191.06	3310	-152*	29-149		
Dibenz[a,h]anthracene	3820	U	3820	ug/kg wet	191.06	3550 U	*	27-153		
Benzo[g,h,i] perylene	2860	J, D	3820	ug/kg wet	191.06	2890	-18*	32-157		
Surrogate: Triphenylene	*874*			*ug/kg wet*	*191.06*		*457**	*68-129*		
Matrix Spike Dup (L207203-MSD1)		**Source: 1207054-01**		Prepared: 07/31/2012 Analyzed: 08/02/2012						
Naphthalene	2270	J, D	3870	ug/kg wet	193.80	9140	-3550*	0-127	-175	40
Acenaphthylene	2250	J, D	3870	ug/kg wet	193.80	3550 U	1160*	50-140	190*	40
Acenaphthene	26600	D	3870	ug/kg wet	193.80	521000	255000*	17-139	-117	40
Fluorene	32500	D	3870	ug/kg wet	193.80	57300	-12800*	28-145	2010*	40
Phenanthrene	3870	U	3870	ug/kg wet	193.80	9200	-4750*	30-152	-72	40
Anthracene	3870	U	3870	ug/kg wet	193.80	3550 U	*	19-171		40
Fluoranthene	1140	J, D	3870	ug/kg wet	193.80	13100	-6190*	34-159	-155	40
Indeno[1,2,3-cd]pyrene	3870	U	3870	ug/kg wet	193.80	1310	-678*	31-156	-255	40
Pyrene	3870	U	3870	ug/kg wet	193.80	9730	-5020*	33-152	-108	40
Benz[a]anthracene	3870	U	3870	ug/kg wet	193.80	3520	-1810*	32-157	-125	40
Chrysene	3870	U	3870	ug/kg wet	193.80	4960	-2560*	31-159	-121	40
Benzo[b] fluoranthene	3870	U	3870	ug/kg wet	193.80	2330	-1200*	33-164	-133	40
Benzo[k] fluoranthene	3870	U	3870	ug/kg wet	193.80	1190	-613*	28-161	-151	40
Benzo[a] pyrene	3870	U	3870	ug/kg wet	193.80	3310	-1710*	29-149	-167	40
Dibenz[a,h]anthracene	3870	U	3870	ug/kg wet	193.80	3550 U	*	27-153		40
Benzo[g,h,i] perylene	3870	U	3870	ug/kg wet	193.80	2890	-1490*	32-157	-195	40
Surrogate: Triphenylene	*271*			*ug/kg wet*	*193.80*		*140**	*68-129*		

PREPARATION BENCH SHEET

L207203

Lionville Laboratory

Printed: 8/1/2012 12:33:34PM

00000073

Matrix: Solid

Prepared using: HPLC - SW 3540C

Surrogate used: 1200612

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1207054-01	8310 PAH	07/31/2012 14:53	28.18	5				50	WC-Hanford, Inc.	
1207061-01	8310 PAH	07/31/2012 14:53	26.34	5				50	WC-Hanford, Inc.	
L207203-BLK1	QC	07/31/2012 14:53	30	5				50		
L207203-BS1	QC	07/31/2012 14:53	30	5	1200963		50	50		
L207203-MS1	QC	07/31/2012 14:53	26.17	5	1200963	1207054-01	50	50		
L207203-MS2	QC	07/31/2012 14:53	23.17	5	1200963	1207061-01	50	50		
L207203-MSD1	QC	07/31/2012 14:53	25.8	5	1200963	1207054-01	50	50		
L207203-MSD2	QC	07/31/2012 14:53	23.42	5	1200963	1207061-01	50	50		

8/1/12 1233

Extracts Relinquished By / Date

8-1-12

Extracts Received By / Date

METALS

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: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/29/2012 08:21

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PW65	1207054-01	Other Solid	07/23/2012 14:40	07/25/2012 10:10

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Case Narrative

Client: WC-HANFORD RC-150
LVL#: 1207054
SDG/SAF#: K3959/RC-150

W.O.#: 60049-001-001-0001-00
Date Received: 07-25-12

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 solid sample and 1 TCLP leachate sample.

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

   The sample was analyzed and reported with a 3-fold dilution for ICP metals due to sample matrix.

   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 with the exception of the TCLP leachate sample for Mercury. The TCLP procedure for Mercury was performed within the required holding time. The analysis of all Mercury leachates were performed outside 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 or 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 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 9 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
J1PW65	Aluminum	22,000	94.4
	Antimony	100	116.1
	Chromium	100	103.4
	Cobalt	100	106.8
	Iron	22,000	88.0
	Lead	100	83.9
	Manganese	1,000	92.9
	Silicon	2,100	103.9
	Zinc	100	76.0

12. The duplicate analyses for 7 analytes were outside the 20% Relative Percent Difference (RPD) control limit criteria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The samples result for Molybdenum and Silver was less than ten times the MDL.

13. The TCLP extract from sample J1PW65 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. All TCLP leachate 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

8/29/12
Date

rgc/07-054tchgno%

264 Welsh Pool Road
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Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/29/2012 08:21

Notes and Definitions

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

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/29/2012 08:21

J1PW65
1207054-01 (Other Solid)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**4330**		14.7	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Antimony	1.76	U	1.76	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Arsenic	**1.30**	B	2.94	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Barium	**94.9**		1.47	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Beryllium	0.147	U	0.147	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Boron	**5.10**	B	5.88	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Cadmium	0.588	U	0.588	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Calcium	**3320**		294	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Chromium	**19.8**		0.588	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Cobalt	**44.0**		5.88	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Copper	**8.46**		2.94	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Iron	**11900**		58.8	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Lead	**187**		1.47	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Lithium	**2.07**	B	7.35	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Magnesium	**1660**		221	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Manganese	**136**		14.7	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Molybdenum	**1.40**	B	5.88	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Nickel	**7.54**	B	11.8	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Potassium	**275**	B	1180	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Selenium	2.94	U	2.94	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Silicon	**614**		5.88	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Silver	**1.05**		0.588	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Sodium	**306**		147	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Uranium	58.8	U	58.8	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Vanadium	**27.3**		7.35	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Zinc	**926**		29.4	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Zirconium	**11.8**		7.35	mg/kg wet	3	L207156	07/26/2012	07/30/2012	6010B
Mercury	**0.114**		0.0257	mg/kg wet	1	L207148	07/25/2012	07/26/2012	7471A

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/29/2012 08:21

J1PW65

1207054-01 (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	L208234	08/24/2012	08/28/2012	6010
Barium	**0.108**		0.00500	mg/L	5	L208234	08/24/2012	08/28/2012	6010
Cadmium	0.0150	U	0.0150	mg/L	5	L208234	08/24/2012	08/28/2012	6010
Chromium	**0.00282**	B	0.0250	mg/L	5	L208234	08/24/2012	08/28/2012	6010
Lead	**0.0294**	B	0.0500	mg/L	5	L208234	08/24/2012	08/28/2012	6010
Selenium	0.100	U	0.100	mg/L	5	L208234	08/24/2012	08/28/2012	6010
Silver	0.0300	U	0.0300	mg/L	5	L208234	08/24/2012	08/28/2012	6010
Mercury	0.000200	U	0.000200	mg/L	1	L208232	08/24/2012	08/27/2012	7470

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/29/2012 08:21

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 L207148 - SW 7471A Prep										
Blank (L207148-BLK1)				Prepared: 07/25/2012 Analyzed: 07/26/2012						
Mercury	0.0281	U	0.0281	mg/kg wet						
Duplicate (L207148-DUP3)		**Source: 1207054-01**		Prepared: 07/25/2012 Analyzed: 07/26/2012						
Mercury	0.163		0.0237	mg/kg wet		0.114			35.5*	20
Matrix Spike (L207148-MS3)		**Source: 1207054-01**		Prepared: 07/25/2012 Analyzed: 07/26/2012						
Mercury	0.274		0.0237	mg/kg wet	0.13158	0.114	121	75-125		20
Reference (L207148-SRM1)				Prepared: 07/25/2012 Analyzed: 07/26/2012						
Mercury	1.22		0.0300	mg/kg wet	1.2900		94.6	62.6-138		
Batch L207156 - SW 3050B										
Blank (L207156-BLK1)				Prepared: 07/26/2012 Analyzed: 07/30/2012						
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						
Lithium	2.50	U	2.50	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						
Uranium	20.0	U	20.0	mg/kg wet						
Vanadium	2.50	U	2.50	mg/kg wet						

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/29/2012 08:21

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 L207156 - SW 3050B										
Blank (L207156-BLK1)				Prepared: 07/26/2012 Analyzed: 07/30/2012						
Zinc	10.0	U	10.0	mg/kg wet						
Zirconium	0.208	B	2.50	mg/kg wet						
Duplicate (L207156-DUP2)		**Source: 1207054-01**		Prepared: 07/26/2012 Analyzed: 07/30/2012						
Aluminum	4750		14.4	mg/kg wet		4330			9.28	20
Antimony	1.73	U	1.73	mg/kg wet		1.76 U				20
Arsenic	1.41	B	2.88	mg/kg wet		1.30			8.09	20
Barium	116		1.44	mg/kg wet		94.9			20.1*	20
Beryllium	0.144	U	0.144	mg/kg wet		0.147 U				20
Boron	5.18	B	5.77	mg/kg wet		5.10			1.46	20
Cadmium	0.577	U	0.577	mg/kg wet		0.588 U				20
Calcium	3170		288	mg/kg wet		3320			4.63	20
Chromium	20.5		0.577	mg/kg wet		19.8			3.53	20
Cobalt	35.7		5.77	mg/kg wet		44.0			21.0*	20
Copper	8.01		2.88	mg/kg wet		8.46			5.48	20
Iron	9990		57.7	mg/kg wet		11900			17.8	20
Lead	203		1.44	mg/kg wet		187			8.08	20
Lithium	1.78	B	7.21	mg/kg wet		2.07			14.8	20
Magnesium	1350		216	mg/kg wet		1660			20.3*	20
Manganese	104		14.4	mg/kg wet		136			26.8*	20
Molybdenum	0.865	B	5.77	mg/kg wet		1.40			47.0*	20
Nickel	7.14	B	11.5	mg/kg wet		7.54			5.47	20
Potassium	245	B	1150	mg/kg wet		275			11.3	20
Selenium	2.88	U	2.88	mg/kg wet		2.94 U				20
Silicon	394		5.77	mg/kg wet		614			43.6*	20
Silver	0.808		0.577	mg/kg wet		1.05			25.8*	20
Sodium	302		144	mg/kg wet		306			1.18	20
Uranium	57.7	U	57.7	mg/kg wet		58.8 U				20
Vanadium	23.5		7.21	mg/kg wet		27.3			14.9	20
Zinc	674		28.8	mg/kg wet		926			31.5*	20
Zirconium	10.2		7.21	mg/kg wet		11.8			14.5	20

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K3959 Project Manager: Joan Kessner	**Reported:** 08/29/2012 08:21

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 L207156 - SW 3050B									
Matrix Spike (L207156-MS2)		**Source: 1207054-01**	Prepared: 07/26/2012 Analyzed: 07/30/2012						
Aluminum	5340	13.4	mg/kg wet	178.57	4330	568*	75-125		
Antimony	33.2	1.61	mg/kg wet	44.643	1.76 U	74.4*	75-125		
Arsenic	176	2.68	mg/kg wet	178.57	1.30	97.7	75-125		
Barium	260	1.34	mg/kg wet	178.57	94.9	92.3	75-125		
Beryllium	4.41	0.134	mg/kg wet	4.4643	0.147 U	98.8	75-125		
Boron	96.9	5.36	mg/kg wet	89.286	5.10	103	75-125		
Cadmium	5.05	0.536	mg/kg wet	4.4643	0.588 U	113	75-125		
Calcium	5480	268	mg/kg wet	2232.1	3320	96.5	75-125		
Chromium	50.1	0.536	mg/kg wet	17.857	19.8	170*	75-125		
Cobalt	72.8	5.36	mg/kg wet	44.643	44.0	64.5*	75-125		
Copper	30.3	2.68	mg/kg wet	22.321	8.46	97.8	75-125		
Iron	9990	53.6	mg/kg wet	89.286	11900	-2180*	75-125		
Lead	275	1.34	mg/kg wet	44.643	187	197*	75-125		
Lithium	89.0	6.70	mg/kg wet	89.286	2.07	97.3	75-125		
Magnesium	3360	201	mg/kg wet	2232.1	1660	76.3	75-125		
Manganese	151	13.4	mg/kg wet	44.643	136	32.6*	75-125		
Molybdenum	88.4	5.36	mg/kg wet	89.286	1.40	97.5	75-125		
Nickel	49.1	10.7	mg/kg wet	44.643	7.54	93.0	75-125		
Potassium	2300	1070	mg/kg wet	2232.1	275	90.8	75-125		
Selenium	172	2.68	mg/kg wet	178.57	2.94 U	96.2	75-125		
Silicon	541	5.36	mg/kg wet	89.286	614	-81.8*	75-125		
Silver	4.83	0.536	mg/kg wet	4.4643	1.05	84.8	75-125		
Sodium	2490	134	mg/kg wet	2232.1	306	98.1	75-125		
Uranium	430	53.6	mg/kg wet	446.43	58.8 U	96.3	75-125		
Vanadium	65.0	6.70	mg/kg wet	44.643	27.3	84.5	75-125		
Zinc	607	26.8	mg/kg wet	44.643	926	-713*	75-125		
Zirconium	440	6.70	mg/kg wet	446.43	11.8	95.9	75-125		

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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 L207156 - SW 3050B									
Reference (L207156-SRM1)			Prepared: 07/26/2012 Analyzed: 07/30/2012						
Aluminum	10200	14.7	mg/kg wet	6670.0		153	0-200.89		
Antimony	48.1	1.76	mg/kg wet	53.000		90.7	0-235.8		
Arsenic	117	2.94	mg/kg wet	114.00		102	82.8-117.54		
Barium	306	1.47	mg/kg wet	307.00		99.6	79.8-120.2		
Beryllium	103	0.147	mg/kg wet	108.00		95.1	82.8-117.6		
Boron	82.9	5.88	mg/kg wet	85.100		97.4	67.5-132.8		
Cadmium	219	0.588	mg/kg wet	225.00		97.3	83.6-116.4		
Calcium	3060	294	mg/kg wet	3360.0		90.9	83.3-116.9		
Chromium	77.4	0.588	mg/kg wet	77.200		100	73.3-126.4		
Cobalt	159	5.88	mg/kg wet	166.00		95.9	80.7-118.7		
Copper	273	2.94	mg/kg wet	271.00		101	80.8-119.2		
Iron	8170	58.8	mg/kg wet	8420.0		97.1	78.6-121.1		
Lead	183	1.47	mg/kg wet	190.00		96.3	81.6-118.4		
Lithium	121	7.35	mg/kg wet	114.00		106	50.9-148.2		
Magnesium	7460	221	mg/kg wet	8570.0		87.1	83.2-116.7		
Manganese	879	14.7	mg/kg wet	965.00		91.1	69.3-130.5		
Molybdenum	239	5.88	mg/kg wet	235.00		102	76.2-123.8		
Nickel	221	11.8	mg/kg wet	221.00		99.8	79.6-120.8		
Potassium	13600	1180	mg/kg wet	14400		94.6	81.9-118.1		
Selenium	191	2.94	mg/kg wet	187.00		102	75.9-124.6		
Silicon	855	5.88	mg/kg wet	807.00		106	0-219.3		
Silver	79.0	0.588	mg/kg wet	83.500		94.6	82.7-117.1		
Sodium	9290	147	mg/kg wet	9730.0		95.5	82.5-117.2		
Vanadium	102	7.35	mg/kg wet	98.700		104	75.9-123.6		
Zinc	194	29.4	mg/kg wet	199.00		97.5	78.4-121.6		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/29/2012 08:21

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 L208232 - SW 7470A Prep										
Blank (L208232-BLK1)				Prepared: 08/24/2012 Analyzed: 08/27/2012						
Mercury	0.000200	U	0.000200	mg/L						
Blank (L208232-BLK3)				Prepared: 08/24/2012 Analyzed: 08/27/2012						
Mercury	0.000200	U	0.000200	mg/L						
LCS (L208232-BS1)				Prepared: 08/24/2012 Analyzed: 08/27/2012						
Mercury	0.00544		0.000200	mg/L	0.0050000		109	80-120		
Duplicate (L208232-DUP2)		**Source: 1207054-01**		Prepared: 08/24/2012 Analyzed: 08/27/2012						
Mercury	0.000200	U	0.000200	mg/L		0.000200 U				20
Matrix Spike (L208232-MS2)		**Source: 1207054-01**		Prepared: 08/24/2012 Analyzed: 08/28/2012						
Mercury	0.192		0.0100	mg/L	0.20000	0.000200 U	96.2	50-1000		
Batch L208234 - SW 3010A										
Blank (L208234-BLK1)				Prepared: 08/24/2012 Analyzed: 08/28/2012						
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.000477	B	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 (L208234-BLK3)				Prepared: 08/24/2012 Analyzed: 08/28/2012						
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						

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K3959	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	08/29/2012 08:21

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 L208234 - SW 3010A										
LCS (L208234-BS1)				Prepared: 08/24/2012 Analyzed: 08/28/2012						
Arsenic	10.0		0.0150	mg/L	10.000		100	80-120		
Barium	4.96		0.00100	mg/L	5.0000		99.3	80-120		
Cadmium	0.212		0.00300	mg/L	0.25000		84.8	80-120		
Chromium	0.492		0.00500	mg/L	0.50000		98.3	80-120		
Lead	2.38		0.0100	mg/L	2.5000		95.0	80-120		
Selenium	9.65		0.0200	mg/L	10.000		96.5	80-120		
Silver	0.495		0.00600	mg/L	0.50000		99.1	80-120		
Duplicate (L208234-DUP2)		**Source: 1207054-01**		Prepared: 08/24/2012 Analyzed: 08/28/2012						
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.108		0.00500	mg/L		0.108			0.231	20
Cadmium	0.0150	U	0.0150	mg/L		0.0150 U				20
Chromium	0.00301	B	0.0250	mg/L		0.00282			6.39	20
Lead	0.0292	B	0.0500	mg/L		0.0294			0.494	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 (L208234-MS2)		**Source: 1207054-01**		Prepared: 08/24/2012 Analyzed: 08/28/2012						
Arsenic	5.31		0.0750	mg/L	5.0000	0.0750 U	106	50-1000		
Barium	98.2		0.00500	mg/L	100.00	0.108	98.0	50-1000		
Cadmium	1.02		0.0150	mg/L	1.0000	0.0150 U	102	50-1000		
Chromium	5.15		0.0250	mg/L	5.0000	0.00282	103	50-1000		
Lead	4.86		0.0500	mg/L	5.0000	0.0294	96.6	50-1000		
Selenium	1.01		0.100	mg/L	1.0000	0.100 U	101	50-1000		
Silver	5.27		0.0300	mg/L	5.0000	0.0300 U	105	50-1000		

Lionville Laboratory

Logbook #: 1128

SAMPLE DIGESTION RECORD

Digestion Batch #: L207156
Date/Time Initiated: 7/25/12, 1530
Date/Time Completed: 7/26/12 1500
Analyst: NW
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 #: B/4
Balance Cal Verification: Y NA
Temp: 97°
BLOCK 1 2 3 (circle one)

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
1207051-01		0.58	50		TO	coarse	gray/dk gray granules	rocks	
L207156-DUP1		0.59	50						
MS1	0.5 ⊛	0.61	50						
1207051-02		0.54	50			coarse	dk gray, tan/dk gray	rocks	RAD
03		0.52	50			fine	tan/mud	rocks	RAD
04		0.55	50			coarse	dk. brown/dk gray	rocks	RAD
05		0.54	50			fine	brown/muddy	rocks	RAD
06		0.58	50			coarse	dark brown/clay	rocks	
1207054-01		0.51	50			coarse	brick red chunks,	N/A	
L207156-DUP2		0.52	50				blue fibers, olive		
MS2	0.5 ⊛	0.56	50				brown clay ceramic-like		
BLK1		0.50	50			coarse	white boiling chips		
SRM1	*	0.51	50			fine	pink sandy		

NW 7/25/12

Spiking IDs / Expiration Date:
MS#: 1200457
LCS#: 1101357 *

Reagent IDs:
HNO_3 L08023
HCl L01031
H_2O_2 K09A03
1:1 HNO_3 657-066-02
1:1 HCl

File ID#:

Data Review By/Date:
RW 7/31/12

⊛ also 0.25 ml each of:
1200380 U
1200386 Zr

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Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 7/25/12
Start Time/Temp: 1830/94°
End Time/Temp: 1900/96°

Instrument ID: Hg 3.1
Balance # B14 /NA
Pipette Calibration (Daily) (Y)

Logbook # 1143
Prep Batch: L107148
Worksheet:
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				10 ml	50	
0.2 µg/l		0.100		10 ml	50	
1.0 µg/l		0.500		10 ml	50	
2.0 µg/l		1.000		10 ml	50	
5.0 µg/l		2.500		10 ml	50	
10.0 µg/l		5.000		10 ml	50	
ICV		0.125	2.5	10 ml	50	
CCV		0.250	5.0	10 ml	50	
ICB/CCB				10 ml	50	
L207148-BLK1				0.32	50	
SRM1		(*)	(*)	0.30	50	
1207049-01				0.30	50	
L207148-DUP1				0.31	50	
MS1		0.500	1.0	0.30	50	
1207051-01				0.35	50	
L207148-DUP2				0.34	50	
MS2		0.500	1.0	0.38	50	
1207051-02				0.37	50	RAD
03				0.34	50	
04				0.35	50	
05				0.39	50	
06				0.38	50	
1207054-01 w.c. MW 7/25/12				0.35	50	
L207148-DUP3				0.38	50	
MS3		0.500	1.0	0.38	50	
	MW 7/25/12					

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1200588	7/25/12 1130
ICV/CCV/LCS	(I.V. 1200532)	N/A

Reviewed By/Date: RBG 7/31/12

se book # 1143, pg 1 for std traceability information

Soil LCS True Value = 1.79 mg/Kg
Standard # 1101357 (*)

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

ME-HgCVAA-Prep0910

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Lionville Laboratory

Logbook #: 1128

SAMPLE DIGESTION RECORD

Digestion Batch #: L208234
Date/Time Initiated: 8/24/12 1115
Date/Time Completed: 8/24/12 1810
Analyst: MW
Matrix (circle): Soil Water Other TCLP leach
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 #:
Balance Cal Verification: Y NA
Temp: 96°
BLOCK 1 2 (circle one)
3

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1207051-03		50	50	<	TC	N/A	clear / colorless		
L208234-DUP1		50	50	<					
MS1	0.5	50	50						
1207051-05		50	50	<			clear/colorless		
1207054-01		50	50	<			clear/colorless		
L208234-DUP2		50	50	<					
MS2	0.5	50	50						
1208072-01		50	50	<			smoky brown/nearly clear		
L208234-DUP3		50	50	<					
MS3	0.5	50	50						
BLK1		50	50				clear/colorless		
BS1	0.5	50	50						
1) BLK2		50	50	<					
2) BLK3		50	50	<					
3) BLK4		50	50	<					

MW 8/24/12

Spiking IDs / Expiration Date:
MS#: 1101384
1200388
LCS#: 1200453

Reagent IDs:
HNO_3 L08023
HCl
H_2O_2
1:1 HNO_3
1:1 HCl 637-069-01

File ID#:

Data Review By/Date: MW 8/28/12

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1) L208202 (1207051)
2) L207155 (1207054)
3) L208200 (1208072)

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MERCURY PREPARATION

Analyst: [illegible]
Date 8/24/12
Start Time/Temp: 1415/95°
End Time/Temp: 1615/97°

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

Logbook # 1153
Prep Batch: L208232
Worksheet: HG082701/HG082801
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				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		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	
L208232-BLK1				35	35	
BS1		0.175	5.0	35	35	
BLK2				35	35	L208202
BLK3				35	35	L207155
BLK4				35	35	L208200
1207051-03				35	35	(L208220-BLK1)
L208232-DUP1				35	35	
MS1		0.700	200 *	35	35	
1207051-05				35	35	
1207054-01				35	35	(L208155-BLK1)
L208232-DUP2				35	35	IE aem 8/29/12
MS2		0.700	200 *	35	35	
1208072-01				35	35	(L208200-BLK1)
L208232-DUP3				35	35	
MS3		0.700	200 *	35	35	

pm 8/24/12

Standard:	ID	Prep Date/Time
ICAL/MS	RT 1200588	8/24/12 1130
ICV/CCV/LCS	(I.V. 1200532)	N/A

Reviewed By/Date: aem 8/28/12

se book # 1153 18 for std traceability information

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

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

* used 1200587 (10 ug/ml)

ME-HgCVAA-Prep0910

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Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 1116

Start Date: 7-25-12 Start Time: 12:53 Analyst: RH SOP: SPI-1311.1	End Date: 7-26-12 End Time: 7:00 Analyst: RH Method: 1311.1	Tumbler Speed: 30 RPM Leachate Batch #: L207155 Leachate Page: 1 of 1 Room Temp. (°C): Start 21 /Finish 21 **Room Temp. Acceptance Criteria: 23°C ± 2°**

LvL #: 1207047-01 Client ID#: JIPW60 pH After 5 Min: 5.26 pH After Acid/Heat: 1.98 Extraction Fluid/pH: #1 4.97 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.96	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: 1207053-01 Client ID#: MEASCRUB1 pH After 5 Min: 4.51 pH After Acid/Heat: N/A Extraction Fluid/pH: #1 4.97 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 1000 pH After Extraction: 5.01	Initial Filtration Data and Comments: Solids: _____% / NA *RAD I Initial Filtrate Added: _____
LvL # 1207054-01 Client ID#: JIPW65 pH After 5 Min: 6.23 pH After Acid/Heat: 1.99 Extraction Fluid/pH: #1 4.97 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 5.02	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: L207155 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: _____

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	1200780	6-18-12	12-18-12	4.93 ± 0.05
Fluid # 2				2.88 ± 0.05

SPI-1311.1-A-0310 Reviewed By/Date [signature] 8/6/12 Page #