0098145

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

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 7/7/11
INITIAL/DATE

COMMENTS:

SDG K3418 SAF RC-029

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

Waste Site: 100-H-51:5

RECEIVED
AUG 11 2011
EDMC

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
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Richmond, California 94804-3849
Phone (510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

July 1, 2011

RECEIVED
JUL 2011

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

Reference: **P.O. #S00W235A00**
Eberline Analytical S1-06-107-7718, SDG K3418

Dear Ms. Kessner:

Enclosed is the data report for two soil samples designated under SAF No. RC-029 received at Eberline Analytical on June 22, 2011. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville
Client Services Manager

NJV/ljb

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K3418 was composed of two soil samples designated under SAF No. RC-029 with a Project Designation of: Remaining Sites Confirmation Sampling – Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist. The results were transmitted to WCH via e-mail on July 1, 2011.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 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."

07/01/11

N. Joseph Verville
Client Services Manager

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 K3418

SDG	7718
Contact	N.Joseph Verville

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K3418

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

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

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VB

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	07/01/11

SDG 7718
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

SDG 7718
Contact N.Joseph Verville

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

SDG 7718
Contact N.Joseph Verville

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
S106107-01	J1JW30	100-H-51:5	SOIL		RC-029	RC-029-116	06/20/11 14:50
S106107-02	J1JW31	100-H-51:5	SOIL		RC-029	RC-029-117	06/20/11 15:30
S106107-03	Lab Control Sample		SOIL		RC-029		
S106107-04	Method Blank		SOIL		RC-029		
S106107-05	Duplicate (S106107-01)	100-H-51:5	SOIL		RC-029		06/20/11 14:50

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

SDG 7718
Contact N.Joseph Verville

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

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
7718	RC-029-116	J1JW30	SOIL	94.1	668 g		06/22/11	2	S106107-01	7718-001
	RC-029-117	J1JW31	SOIL	96.9	610 g		06/22/11	2	S106107-02	7718-002
		Method Blank	SOIL						S106107-04	7718-004
		Lab Control Sample	SOIL						S106107-03	7718-003
		Duplicate (S106107-01)	SOIL	94.1	668 g		06/22/11	2	S106107-05	7718-005

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

SDG 7718
Contact N.Joseph Verville

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
93A	SOIL	Gross Alpha in Solids	7287-204	20.6	2			1	1	1/1		
93B	SOIL	Gross Beta in Solids	7287-204	20.6	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOIL	Gamma Scan	7287-204	7.0	2			1	1	1/1		

Duplicates and Spikes are those with original sample in the QC Batch of some Client sample in this SDG.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

SDG 7718
Contact N.Joseph Verville

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
S106107-01	J1JW30			7718-001	93A/93		06/30/11	06/30/11	BW	Gross Alpha in Solids
06/20/11	100-H-51:5		SOIL	7718-001	93B/93		06/30/11	06/30/11	BW	Gross Beta in Solids
06/22/11	RC-029-116	RC-029		7718-001	GAM		06/25/11	06/28/11	MWT	Gamma Scan
S106107-02	J1JW31			7718-002	93A/93		06/30/11	06/30/11	BW	Gross Alpha in Solids
06/20/11	100-H-51:5		SOIL	7718-002	93B/93		06/30/11	06/30/11	BW	Gross Beta in Solids
06/22/11	RC-029-117	RC-029		7718-002	GAM		06/25/11	06/28/11	MWT	Gamma Scan
S106107-03	Lab Control Sample			7718-003	93A/93		06/30/11	06/30/11	BW	Gross Alpha in Solids
			SOIL	7718-003	93B/93		06/30/11	06/30/11	BW	Gross Beta in Solids
		RC-029		7718-003	GAM		06/27/11	06/28/11	MWT	Gamma Scan
S106107-04	Method Blank			7718-004	93A/93		06/30/11	06/30/11	BW	Gross Alpha in Solids
			SOIL	7718-004	93B/93		06/30/11	06/30/11	BW	Gross Beta in Solids
		RC-029		7718-004	GAM		06/25/11	06/28/11	MWT	Gamma Scan
S106107-05	Duplicate (S106107-01)			7718-005	93A/93		06/30/11	06/30/11	BW	Gross Alpha in Solids
06/20/11	100-H-51:5		SOIL	7718-005	93B/93		06/30/11	06/30/11	BW	Gross Beta in Solids
06/22/11		RC-029		7718-005	GAM		06/27/11	06/28/11	MWT	Gamma Scan

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-029	Gross Alpha in Solids	900.0_ALPHABETA_GPC	2			1	1	1	5
93B/93	RC-029	Gross Beta in Solids	900.0_ALPHABETA_GPC	2			1	1	1	5
GAM	RC-029	Gamma Scan	GAMMA_GS	2			1	1	1	5
TOTALS				6			3	3	3	15

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

7718-004 Method Blank

METHOD BLANK

SDG	7718	Client/Case no	Hanford	SDG K3418	
Contact	N.Joseph Verville	Contract	No. S00W235A00		
Lab sample id	S106107-04	Client sample id	Method Blank		
Dept sample id	7718-004	Material/Matrix		SOIL	
		SAF No	RC-029		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.132	1.5	3.27	10.0	U	93A
Gross Beta	12587-47-2	-2.08	2.9	5.16	15.0	U	93B
Potassium 40	13966-00-2	U		0.472		U	GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.100	U	GAM
Radium 226	13982-63-3	U		0.100	0.100	U	GAM
Radium 228	15262-20-1	U		0.184	0.200	U	GAM
Europium 152	14683-23-9	U		0.089	0.100	U	GAM
Europium 154	15585-10-1	U		0.117	0.100	U	GAM
Europium 155	14391-16-3	U		0.103	0.100	U	GAM
Thorium 228	14274-82-9	U		0.065		U	GAM
Thorium 232	TH-232	U		0.184		U	GAM
Uranium 235	15117-96-1	U		0.199		U	GAM
Uranium-238	U-238	U		4.92		U	GAM
Americium 241	14596-10-2	U		0.184		U	GAM

QC-BLANK #78870

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

7718-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7718

Contact N.Joseph Verville

Client/Case no Hanford SDG K3418

Contract No. S00W235A00

Lab sample id S106107-03

Dept sample id 7718-003

Client sample id Lab Control Sample

Material/Matrix SOIL

SAF No RC-029

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	124	14	3.21	10.0		93A	111	4.4	112	60-140	80-120
Gross Beta	92.5	7.3	5.26	15.0		93B	104	4.2	89	70-130	80-120
Cobalt 60	1.29	0.12	0.066	0.050		GAM	1.27	0.051	102	81-119	80-120
Cesium 137	1.33	0.10	0.066	0.100		GAM	1.31	0.052	102	83-117	80-120

QC-LCS #78869

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

7718-005 J1JW30

DUPLICATE

SDG	7718			Client/Case no	Hanford SDG K3418
Contact	N.Joseph Verville			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	S106107-05	Lab sample id	S106107-01	Client sample id	J1JW30
Dept sample id	7718-005	Dept sample id	7718-001	Location/Matrix	100-H-51:5 SOIL
		Received	06/22/11	Collected/Weight	06/20/11 14:50 668 g
% solids	94.1	% solids	94.1	Custody/SAF No	RC-029-116 RC-029

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	8.46	3.7	3.17	10.0		93A	7.71	3.6	2.97		9	105	0.3
Gross Beta	15.8	4.0	5.12	15.0		93B	14.6	3.9	5.12		8	70	0.3
Potassium 40	10.3	1.1	0.622			GAM	9.84	0.89	0.294		5	26	0.5
Cobalt 60	U		0.064	0.050	U	GAM	U		0.045	U	-		0.5
Cesium 137	U		0.056	0.100	U	GAM	U		0.052	U	-		0.1
Radium 226	0.359	0.11	0.118	0.100		GAM	0.348	0.095	0.088		3	63	0.1
Radium 228	0.568	0.30	0.270	0.200		GAM	0.470	0.18	0.182		19	102	0.6
Europium 152	U		0.136	0.100	U	GAM	U		0.119	U	-		0.2
Europium 154	U		0.186	0.100	U	GAM	U		0.149	U	-		0.3
Europium 155	U		0.135	0.100	U	GAM	U		0.123	U	-		0.1
Thorium 228	0.441	0.064	0.071			GAM	0.429	0.063	0.060		3	34	0.2
Thorium 232	0.568	0.30	0.270			GAM	0.470	0.18	0.182		19	102	0.6
Uranium 235	U		0.261		U	GAM	U		0.241	U	-		0.1
Uranium-238	U		7.61		U	GAM	U		5.67	U	-		0.4
Americium 241	U		0.232		U	GAM	U		0.128	U	-		0.8

QC-DUP#1 78871

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

7718-001 J1JW30

DATA SHEET

SDG	7718	Client/Case no	Hanford	SDG K3418	
Contact	N.Joseph Verville	Contract	No. S00W235A00		
Lab sample id	S106107-01	Client sample id	J1JW30		
Dept sample id	7718-001	Location/Matrix	100-H-51:5	SOIL	
Received	06/22/11	Collected/Weight	06/20/11 14:50	668 g	
% solids	94.1	Custody/SAF No	RC-029-116	RC-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.71	3.6	2.97	10.0		93A
Gross Beta	12587-47-2	14.6	3.9	5.12	15.0		93B
Potassium 40	13966-00-2	9.84	0.89	0.294			GAM
Cobalt 60	10198-40-0	U		0.045	0.050	U	GAM
Cesium 137	10045-97-3	U		0.052	0.100	U	GAM
Radium 226	13982-63-3	0.348	0.095	0.088	0.100		GAM
Radium 228	15262-20-1	0.470	0.18	0.182	0.200		GAM
Europium 152	14683-23-9	U		0.119	0.100	U	GAM
Europium 154	15585-10-1	U		0.149	0.100	U	GAM
Europium 155	14391-16-3	U		0.123	0.100	U	GAM
Thorium 228	14274-82-9	0.429	0.063	0.060			GAM
Thorium 232	TH-232	0.470	0.18	0.182			GAM
Uranium 235	15117-96-1	U		0.241		U	GAM
Uranium-238	U-238	U		5.67		U	GAM
Americium 241	14596-10-2	U		0.128		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

7718-002 J1JW31

DATA SHEET

SDG	7718	Client/Case no	Hanford		SDG K3418
Contact	N.Joseph Verville	Contract	No. S00W235A00		
Lab sample id	S106107-02	Client sample id	J1JW31		
Dept sample id	7718-002	Location/Matrix	100-H-51:5		SOIL
Received	06/22/11	Collected/Weight	06/20/11 15:30	610 g	
% solids	96.9	Custody/SAF No	RC-029-117	RC-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.90	3.3	3.07	10.0		93A
Gross Beta	12587-47-2	16.2	4.0	5.10	15.0		93B
Potassium 40	13966-00-2	12.1	1.4	0.584			GAM
Cobalt 60	10198-40-0	U		0.079	0.050	U	GAM
Cesium 137	10045-97-3	U		0.079	0.100	U	GAM
Radium 226	13982-63-3	0.472	0.13	0.140	0.100		GAM
Radium 228	15262-20-1	0.704	0.31	0.320	0.200		GAM
Europium 152	14683-23-9	U		0.172	0.100	U	GAM
Europium 154	15585-10-1	U		0.246	0.100	U	GAM
Europium 155	14391-16-3	U		0.170	0.100	U	GAM
Thorium 228	14274-82-9	0.575	0.083	0.093			GAM
Thorium 232	TH-232	0.704	0.31	0.320			GAM
Uranium 235	15117-96-1	U		0.332		U	GAM
Uranium-238	U-238	U		9.78		U	GAM
Americium 241	14596-10-2	U		0.296		U	GAM

Remaining Sites Confirmation Sampling - Soil Full Protocol

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

Test	93A Matrix SOIL
SDG	7718
Contact	N.Joseph Verville

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS

GAS PROPORTIONAL COUNTING

Client	Hanford
Contract	No. S00W235A00
Contract	SDG K3418

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Preparation batch 7287-204					
S106107-01	93		7718-001	J1JW30	7.71
S106107-02	93		7718-002	J1JW31	6.90
S106107-03	93		7718-003	Lab Control Sample	ok
S106107-04	93		7718-004	Method Blank	U
S106107-05	93		7718-005	Duplicate (S106107-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	10.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7287-204			2σ prep error 20.6 % Reference Lab Notebook No. 7287 pg.204													
S106107-01	93		J1JW30	2.97	0.100			55		100			10	06/30/11	06/30	GRB-109
S106107-02	93		J1JW31	3.07	0.100			50		100			10	06/30/11	06/30	GRB-111
S106107-03	93		Lab Control Sample	3.21	0.100			63		100				06/30/11	06/30	GRB-112
S106107-04	93		Method Blank	3.27	0.100			65		100				06/30/11	06/30	GRB-109
S106107-05	93		Duplicate (S106107-01)	3.17	0.100			53		100			10	06/30/11	06/30	GRB-111
Nominal values and limits from method				10.0	0.100			0-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD	MDA	3.14	± 0.238
FOR 5 SAMPLES	RESIDUE	57	± 13

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

Test 93B Matrix SOIL
SDG 7718
Contact N.Joseph Verville

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS

GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K3418

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
Preparation batch 7287-204					
S106107-01	93		7718-001	J1JW30	14.6
S106107-02	93		7718-002	J1JW31	16.2
S106107-03	93		7718-003	Lab Control Sample	ok
S106107-04	93		7718-004	Method Blank	U
S106107-05	93		7718-005	Duplicate (S106107-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	15.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7287-204			2σ prep error 20.6 % Reference Lab Notebook No. 7287 pg.204													
S106107-01	93		J1JW30	5.12	0.100			55		100			10	06/30/11	06/30	GRB-109
S106107-02	93		J1JW31	5.10	0.100			50		100			10	06/30/11	06/30	GRB-111
S106107-03	93		Lab Control Sample	5.26	0.100			63		100				06/30/11	06/30	GRB-112
S106107-04	93		Method Blank	5.16	0.100			65		100				06/30/11	06/30	GRB-109
S106107-05	93		Duplicate (S106107-01)	5.12	0.100			53		100			10	06/30/11	06/30	GRB-111
Nominal values and limits from method				15.0	0.100			0-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD	MDA	5.15	± 0.128
FOR 5 SAMPLES	RESIDUE	57	± 13

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/01/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3418

Test GAM Matrix SOIL
SDG 7718
Contact N.Joseph Verville

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K3418

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
Preparation batch 7287-204								
S106107-01			7718-001	J1JW30	U		U	
S106107-02			7718-002	J1JW31	U		U	
S106107-03			7718-003	Lab Control Sample	ok		ok	
S106107-04			7718-004	Method Blank	U		U	
S106107-05			7718-005	Duplicate (S106107-01)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.100	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7287-204			2σ prep error 7.0 % Reference Lab Notebook No. 7287 pg.204													
S106107-01			J1JW30	0.362	205					140			5	06/23/11	06/25	JR,04,00
S106107-02			J1JW31	0.628	194					140			5	06/23/11	06/25	JR,05,00
S106107-03			Lab Control Sample	0.066	190					133				06/23/11	06/27	JR,03,00
S106107-04			Method Blank	0.317	190					141				06/23/11	06/25	JR,08,00
S106107-05			Duplicate (S106107-01)	0.433	205					188			7	06/23/11	06/27	JR,05,00
Nominal values and limits from method				0.050	190					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.361 ± 0.407
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/01/11

SDG 7718
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

SDG 7718
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

SDG 7718
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K3418

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

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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Protocol Hanford1
Version Ver 1.0
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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K3418

DATA SHEET

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

SDG 7718
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K3418

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

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Contract No. S00W235A00
Case no SDG K3418

DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

DUPLICATE

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

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

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

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

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

SDG 7718
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

SDG 7718
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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

SDG 7718
Contact N.Joseph Verville

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K3418

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/01/11

METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-116	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5 K3418 (7718)		SAF No. RC-029		
Ice Chest No. ~~NA~~ AP 6-21-11 WCH-11-023	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A100755		Bill of Lading/Air Bill No. ~~NA~~ AP 6-21-11 See Ospc		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

~~Cool to 4 deg C~~ AJ 6-21-11

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	~~a/G~~	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J1JW30	SOIL	6/20/11	1450				X				

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From Whitney Sexsmith	6/20/11 1600	Received By/Stored In JV Fullmer	1600 6/20/11
Relinquished By/Removed From JV Fullmer	1605 6/20/11	Received By/Stored In 1060, #1 A. Freier	1705 6-20-11
Relinquished By/Removed From 1060, #1 A. Freier	0925 WCH 6-21-11	Received By/Stored In FedEx	
Relinquished By/Removed From FedEx		Received By/Stored In M.F. MATHUSMAN	06/22/11 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta

REVIEWED BY AJ DATE 6-21-11

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-029-117	Page 1 of 1

Collector: W. Sexsmith	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 100-H-51:5 K3418 (7718)		SAF No.: RC-029
Ice Chest No.: ~~NA~~ A46-20-11 WCH-11-023	Field Logbook No.: EL-1601-05	COA: C10H531W00	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A100755		Bill of Lading/Air Bill No.: ~~NA~~ AP621-11 See Ospc

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

~~Cool to 4 deg C~~ AJ 6-21-11

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	aG	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No. / Matrix * / Sample Date / Sample Time											
J1JW31 / SOIL / 6/20/11 / 1530				X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Whitney Sexsmith	Date/Time: 6/20/11 1600	Received By/Stored In: JV Fullmer	Date/Time: 1600 6/20/11
Relinquished By/Removed From: JV Fullmer	Date/Time: 1705 6-20-11	Received By/Stored In: 1060, #1 A. Freier	Date/Time: 1705 6-20-11
Relinquished By/Removed From: WCH 1060, #1 A. Freier	Date/Time: 0925 6-21-11	Received By/Stored In: Fed Ex	Date/Time
Relinquished By/Removed From: FED EX	Date/Time	Received By/Stored In: [illegible]	Date/Time: 06/22/11 09 30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta

REVIEWED BY [illegible] DATE 6-21-11

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

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

WCH-EE-011

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City HIGHLAND State WA

Date/Time received 06/22/11 0930 CoC No. RC-029-117

Container I.D. No. WCH-11-023 Requested TAT (Days) 15 P.O. Received Yes [ ] No [ ]

INSPECTION

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

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by [signature] Date: 06/22/11 Time: 1030

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
AW SAMPLES	LBD						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100482 Calibration date 26 SEP 10

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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6 July 2011

RECEIVED
JUL 2011

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1106076
SDG #	K3418
SAF #	RC-029
Date Received	06/22/11
# Samples	2
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	X
Inorganics	X

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

Odette S. Johnson
Project Manager

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 06/30/2011 13:00

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1JW30	1106076-01	Soil	06/20/2011 14:50	06/22/2011 10:00
J1JW31	1106076-02	Soil	06/20/2011 15:30	06/22/2011 10:00

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Case Narrative

Client: WC-HANFORD RC-029
LVL#: 1106076
SDG/SAF#: K3418/RC-029

W.O.#: 60049-001-001-0001-00
Date Received: 06-22-11

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 2 soil samples.

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

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

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

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

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

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

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer with the exception of Calcium (82.6%) and Magnesium (79.1%) for SRM sample L106217-SRM1. The samples were reported as per the project manager.

10. The matrix spike (MS) recoveries for 12 analytes were outside the 75-125% control limits.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1JW30	Aluminum	22,000	89.2
	Antimony	100	95.7
	Barium	2,100	94.1
	Beryllium	100	98.5
	Boron	100	97.8
	Calcium	20,800	76.5
	Cobalt	100	98.2
	Iron	42,000	52.3
	Lead	100	92.9
	Manganese	1,000	82.7
	Nickel	100	94.8
	Selenium	100	101.1

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The sample results for Arsenic, Beryllium, and Boron were less than ten times the MDL.

13. For the purposes of this report, the data have been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

14. LvL is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

10/30/11
Date

alm/06-076

LIONVILLE LABORATORY
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/30/2011 13:00

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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 06/30/2011 13:00

J1JW30
1106076-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	4840		3.70	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Antimony	0.444	U	0.444	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Arsenic	2.07		0.741	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Barium	68.2		0.370	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Beryllium	0.186		0.148	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Boron	2.88		1.48	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Cadmium	0.111	B	0.148	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Calcium	5450		74.1	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Chromium	5.61		0.148	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Cobalt	5.73		1.48	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Copper	13.0		0.741	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Iron	18900		14.8	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Lead	3.76		0.370	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Magnesium	3380		55.6	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Manganese	235		3.70	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Molybdenum	0.311	B	1.48	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Nickel	8.82		2.96	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Potassium	601		296	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Selenium	0.222	U	0.222	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Silicon	183		1.48	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Silver	0.148	U	0.148	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Sodium	270		37.0	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Vanadium	49.1		1.85	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Zinc	33.2		7.41	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Mercury	0.0282	U	0.0282	mg/kg dry	1	L106252	06/28/2011	06/29/2011	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 06/30/2011 13:00

J1JW31
1106076-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	7060		4.09	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Antimony	0.491	U	0.491	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Arsenic	2.34		0.818	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Barium	56.1		0.409	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Beryllium	0.226		0.164	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Boron	1.73		1.64	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Cadmium	0.124	B	0.164	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Calcium	4970		81.8	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Chromium	10.5		0.164	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Cobalt	5.26		1.64	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Copper	12.0		0.818	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Iron	17600		16.4	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Lead	3.64		0.409	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Magnesium	3880		61.3	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Manganese	278		4.09	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Molybdenum	0.296	B	1.64	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Nickel	10.4		3.27	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Potassium	1060		327	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Selenium	0.245	U	0.245	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Silicon	276		1.64	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Silver	0.164	U	0.164	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Sodium	212		40.9	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Vanadium	44.9		2.04	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Zinc	34.4		8.18	mg/kg dry	1	L106217	06/23/2011	06/28/2011	6010B
Mercury	0.00944	B	0.0258	mg/kg dry	1	L106252	06/28/2011	06/29/2011	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/30/2011 13:00

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 L106217 - SW 3050B										
Blank (L106217-BLK1)				Prepared: 06/23/2011 Analyzed: 06/28/2011						
Aluminum	3.62	U	3.62	mg/kg wet						
Antimony	0.435	U	0.435	mg/kg wet						
Arsenic	0.725	U	0.725	mg/kg wet						
Barium	0.362	U	0.362	mg/kg wet						
Beryllium	0.145	U	0.145	mg/kg wet						
Boron	1.45	U	1.45	mg/kg wet						
Cadmium	0.145	U	0.145	mg/kg wet						
Calcium	12.9	B	72.5	mg/kg wet						
Chromium	0.145	U	0.145	mg/kg wet						
Cobalt	1.45	U	1.45	mg/kg wet						
Copper	0.725	U	0.725	mg/kg wet						
Iron	14.5	U	14.5	mg/kg wet						
Lead	0.362	U	0.362	mg/kg wet						
Magnesium	54.3	U	54.3	mg/kg wet						
Manganese	3.62	U	3.62	mg/kg wet						
Molybdenum	1.45	U	1.45	mg/kg wet						
Nickel	2.90	U	2.90	mg/kg wet						
Potassium	290	U	290	mg/kg wet						
Selenium	0.217	U	0.217	mg/kg wet						
Silicon	1.45	U	1.45	mg/kg wet						
Silver	0.145	U	0.145	mg/kg wet						
Sodium	36.2	U	36.2	mg/kg wet						
Vanadium	1.81	U	1.81	mg/kg wet						
Zinc	1.33	B	7.25	mg/kg wet						
Duplicate (L106217-DUP1)		Source: 1106076-01		Prepared: 06/23/2011 Analyzed: 06/28/2011						
Aluminum	4480		3.76	mg/kg dry		4840			7.75	20
Antimony	0.451	U	0.451	mg/kg dry		0.444 U				20
Arsenic	1.45		0.751	mg/kg dry		2.07			35.1*	20
Barium	44.7		0.376	mg/kg dry		68.2			41.5*	20
Beryllium	0.149	B	0.150	mg/kg dry		0.186			22.1*	20
Boron	1.61		1.50	mg/kg dry		2.88			56.5*	20
Cadmium	0.104	B	0.150	mg/kg dry		0.111			6.15	20
Calcium	5040		75.1	mg/kg dry		5450			7.85	20
Chromium	6.37		0.150	mg/kg dry		5.61			12.8	20
Cobalt	5.92		1.50	mg/kg dry		5.73			3.17	20
Copper	13.0		0.751	mg/kg dry		13.0			0.149	20

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/30/2011 13:00

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 L106217 - SW 3050B										
Duplicate (L106217-DUP1)		**Source: 1106076-01**		**Prepared: 06/23/2011 Analyzed: 06/28/2011**						
Iron	17000		15.0	mg/kg dry		18900			10.3	20
Lead	2.79		0.376	mg/kg dry		3.76			29.8*	20
Magnesium	3390		56.3	mg/kg dry		3380			0.495	20
Manganese	202		3.76	mg/kg dry		235			15.2	20
Molybdenum	0.286	B	1.50	mg/kg dry		0.311			8.28	20
Nickel	10.2		3.00	mg/kg dry		8.82			14.3	20
Potassium	488		300	mg/kg dry		601			20.8*	20
Selenium	0.225	U	0.225	mg/kg dry		0.222 U				20
Silicon	155		1.50	mg/kg dry		183			16.6	20
Silver	0.150	U	0.150	mg/kg dry		0.148 U				20
Sodium	284		37.6	mg/kg dry		270			5.25	20
Vanadium	50.4		1.88	mg/kg dry		49.1			2.57	20
Zinc	33.4		7.51	mg/kg dry		33.2			0.524	20
Matrix Spike (L106217-MS1)		**Source: 1106076-01**		**Prepared: 06/23/2011 Analyzed: 06/28/2011**						
Aluminum	5340		5.03	mg/kg dry	201.24	4840	247*	75-125		20
Antimony	26.3		0.604	mg/kg dry	50.310	0.444 U	52.2*	75-125		20
Arsenic	158		1.01	mg/kg dry	201.24	2.07	77.4	75-125		20
Barium	211		0.503	mg/kg dry	201.24	68.2	70.8*	75-125		20
Beryllium	3.84		0.201	mg/kg dry	5.0310	0.186	72.5*	75-125		20
Boron	78.3		2.01	mg/kg dry	100.62	2.88	74.9*	75-125		20
Cadmium	4.11		0.201	mg/kg dry	5.0310	0.111	79.5	75-125		20
Calcium	6960		101	mg/kg dry	2515.5	5450	59.9*	75-125		20
Chromium	21.0		0.201	mg/kg dry	20.124	5.61	76.4	75-125		20
Cobalt	42.2		2.01	mg/kg dry	50.310	5.73	72.4*	75-125		20
Copper	32.2		1.01	mg/kg dry	25.155	13.0	76.2	75-125		20
Iron	17400		20.1	mg/kg dry	100.62	18900	-1460*	75-125		20
Lead	39.9		0.503	mg/kg dry	50.310	3.76	71.7*	75-125		20
Magnesium	5450		75.5	mg/kg dry	2515.5	3380	82.6	75-125		20
Manganese	246		5.03	mg/kg dry	50.310	235	21.8*	75-125		20
Molybdenum	78.1		2.01	mg/kg dry	100.62	0.311	77.3	75-125		20
Nickel	46.5		4.02	mg/kg dry	50.310	8.82	74.9*	75-125		20
Potassium	2500		402	mg/kg dry	2515.5	601	75.7	75-125		20
Selenium	150		0.302	mg/kg dry	201.24	0.222 U	74.7*	75-125		20
Silicon	283		2.01	mg/kg dry	100.62	183	100	75-125		20
Silver	4.19		0.201	mg/kg dry	5.0310	0.148 U	83.2	75-125		20
Sodium	2290		50.3	mg/kg dry	2515.5	270	80.3	75-125		20

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/30/2011 13:00

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 L106217 - SW 3050B									
Matrix Spike (L106217-MS1)		Source: 1106076-01		Prepared: 06/23/2011 Analyzed: 06/28/2011					
Vanadium	88.7	2.52	mg/kg dry	50.310	49.1	78.7	75-125		20
Zinc	74.4	10.1	mg/kg dry	50.310	33.2	82.0	75-125		20
Reference (L106217-SRM1)				Prepared: 06/23/2011 Analyzed: 06/28/2011					
Aluminum	6600	13.9	mg/kg wet	6670.0		99.0	0-200.89		
Antimony	49.5	1.67	mg/kg wet	53.000		93.4	0-235.8		
Arsenic	103	2.78	mg/kg wet	114.00		90.5	82.8-117.54		
Barium	253	1.39	mg/kg wet	307.00		82.3	79.8-120.2		
Beryllium	89.9	0.556	mg/kg wet	108.00		83.2	82.8-117.6		
Boron	73.1	5.56	mg/kg wet	85.100		85.8	67.5-132.8		
Cadmium	211	0.556	mg/kg wet	225.00		93.9	83.6-116.4		
Calcium	2780	278	mg/kg wet	3360.0		82.6*	83.3-116.9		
Chromium	69.1	0.556	mg/kg wet	77.200		89.6	73.3-126.4		
Cobalt	143	5.56	mg/kg wet	166.00		85.9	80.7-118.7		
Copper	233	2.78	mg/kg wet	271.00		85.8	80.8-119.2		
Iron	7200	55.6	mg/kg wet	8420.0		85.5	78.6-121.1		
Lead	167	1.39	mg/kg wet	190.00		88.0	81.6-118.4		
Magnesium	6780	208	mg/kg wet	8570.0		79.1*	83.2-116.7		
Manganese	784	13.9	mg/kg wet	965.00		81.2	69.3-130.5		
Molybdenum	213	5.56	mg/kg wet	235.00		90.7	76.2-123.8		
Nickel	193	11.1	mg/kg wet	221.00		87.5	79.6-120.8		
Potassium	12800	1110	mg/kg wet	14400		88.9	81.9-118.1		
Selenium	169	0.833	mg/kg wet	187.00		90.4	75.9-124.6		
Silicon	359	5.56	mg/kg wet	807.00		44.5	0-219.3		
Silver	80.0	0.556	mg/kg wet	83.500		95.8	82.7-117.1		
Sodium	8360	139	mg/kg wet	9730.0		85.9	82.5-117.2		
Vanadium	89.1	6.94	mg/kg wet	98.700		90.3	75.9-123.6		
Zinc	181	27.8	mg/kg wet	199.00		90.8	78.4-121.6		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/30/2011 13:00

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 L106252 - SW 7471A Prep										
Blank (L106252-BLK1)				Prepared: 06/28/2011 Analyzed: 06/29/2011						
Mercury	0.0265	U	0.0265	mg/kg wet						
Duplicate (L106252-DUP3)		Source: 1106076-01		Prepared: 06/28/2011 Analyzed: 06/29/2011						
Mercury	0.0282	U	0.0282	mg/kg dry		0.0282 U				20
Matrix Spike (L106252-MS3)		Source: 1106076-01		Prepared: 06/28/2011 Analyzed: 06/29/2011						
Mercury	0.162		0.0282	mg/kg dry	0.15685	0.0282 U	103	75-125		20
Reference (L106252-SRM1)				Prepared: 06/28/2011 Analyzed: 06/29/2011						
Mercury	1.20		0.0290	mg/kg wet	1.2900		92.8	62.6-138		

Lionville Laboratory

Logbook #: 971

SAMPLE DIGESTION RECORD

Digestion Batch #: L106217
Date/Time Initiated: 6/23/11 1235
Date/Time Completed: 6/23/11 1650
Analyst: JJS
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 #: B18
Balance Cal Verification: ✓ NA
Temp: 95
BLOCK 1 2 (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
1106076-01		0.72	50		TO	Coarse	Black/Lt.Br	Rocks	N/A
L106217-Dup		0.71	50			↓	↓	↓	
-MS	0.5	0.57	50						
1106076-02		0.63	50			Fine	Brown	Rocks	
1106077-01		0.60	50			Fine	Brown	Rocks	
L106217-Dup2		0.54	50			↓	↓	↓	
-MS2	0.5	0.54	50						
-BLK1		0.69	50			Coarse	Bai Inc chips		
-SRM1		0.54	50			Fine	Weathered Sand		

JJS
6/27/11

Spiking IDs / Expiration Date:
MS#: 1001897
LCS#: 1100103

Reagent IDs:
HNO_3 K14036
HCl K19059
H_2O_2 K07111
1:1 HNO_3 637-09105
1:1 HCl

File ID#:

Data Review By/Date: 6/27/11

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

Page #:

Lionville Laboratory

MERCURY PREPARATION

Logbook # 968

Analyst: [illegible]
Date 6/28/11
Start Time/Temp: 1640/94°
End Time/Temp: 1715/97°

Instrument ID: HG-3.1
Balance # B29 /NA
Pipette Calibration (Daily) Y

Prep Batch: L106252
Worksheet: HG062901
SOP No. ME-HgCVAA
BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				10ml	50	
0.2 µg/l		0.100		10ml	50	
1.0 µg/l		0.500		10ml	50	
2.0 µg/l		1.000		10ml	50	
5.0 µg/l		2.500		10ml	50	
10.0 µg/l		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L106252-BLK1				0.34	50	
SRM1				0.31	50	
1106101-01				0.36	50	
L106252-DUP1				0.35	50	
MS1		0.500	1.0	0.38	50	
1106101-02				0.35	50	
03				0.35	50	
04				0.36	50	
1106102-01				0.34	50	
L106252-DUP2				0.38	50	
MS2		0.500	1.0	0.36	50	
1106102-02				0.36	50	
03				0.39	50	
1106076-01				0.34	50	
L106252-DUP3				0.34	50	
MS3		0.500	1.0	0.34	50	
1106076-02				0.36	50	
1106077-01				0.34	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 100178SB	6/28/11 1115
ICV/CCV/LCS	I.V. 100178LA	1

Reviewed By/Date: [illegible] 6/30/11

se book # 968 for std traceability information

Soil LCS True Value = 1.31 mg/Kg
Standard # 110810S

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

ME-HgCVAA-Prep0910

Page #:

000000012
~~000000057~~

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 6/28/11
Start Time/Temp: see page 057
End Time/Temp: [illegible]

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

Logbook # 968
Prep Batch: L106252
Worksheet: HG062901
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.
L106252-DUP4				0.34	50	
MS4		0.500	1.0	0.36	50	
1106078-01				0.32	50	
L106252-DUP5				0.32	50	
MS5		0.500	1.0	0.35	50	
1106078-02				0.34	50	
1106086-01				0.33	50	
L106252-DUP6				0.34	50	
MS6		0.500	1.0	0.35	50	
1106086-02				0.32	50	

[illegible] 6/28/11

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	see page 057	

Reviewed By/Date: [illegible] 6/30/11

see book # 9368 for std traceability information

Soil LCS True Value = see page 057 mg/Kg
Standard # ____

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

Lionville Laboratory Use Only
1106076

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-029
Est. Final Proj. Sampling Date
Project#
Project Contact/Phone#
Lionville Laboratory Project Manager Charlotte Johnson
QC SW Del SW TAT 15 days
Date Rec'd 6-22-11 Date Due 7-07-11

Refrigerator #						A			B		C								
#/Type Container	Liquid					2			2		2								
	Solid					1aql			1aql		1aql								
Volume	Liquid																		
	Solid					120			60		60								
Preservatives						—			—		—								
ANALYSES REQUESTED →		ORGANIC							INORG										
		VOA	BNA	Pest/PCB	Herb	PAHs 8310			Metal + Hg	CN	Cl, F, T								
						Lionville Laboratory Use Only													

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
01	J1JW30			S	6-20-11	1450					X			X		X					
02	J1JW31			J	J	1530					X			X		X					

000000014

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	6-22-11	10:00

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-116	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5		SAF No. RC-029		
Ice Chest No. ~~NA~~ AJ 6-20-11 WCH-11-032	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100 765		Bill of Lading/Air Bill No. ~~NA~~ AJ 6-20-11 See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	aG	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J1JW30	SOIL	6/20/11	1450	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Whitney Sexsmith	Date/Time 6/20/11 1600	Received By/Stored In JV Fuller	Date/Time 1600 6/20/11
Relinquished By/Removed From JV Fuller	Date/Time 1705 6-20-11	Received By/Stored In A. Freier (1060, #1)	Date/Time 1705 6-20-11
Relinquished By/Removed From A. Freier (WCH 1060, #1)	Date/Time 0950 6-21-11	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-22-11 1000	Received By/Stored In D. Sai	Date/Time 6-22-11 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta

REVIEWED BY CMB DATE 6/21/11

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

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

WCH-EE-011

000000015

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-117	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5		SAF No. RC-029
Ice Chest No. NA AJ 6-20-11 WCH-11-032	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A100765		Bill of Lading/Air Bill No. NA AJ 6-20-11 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	aG	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time										
J1JW31	SOIL	6/20/11	1530	X	X	X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From Whitney Sexsmith	Date/Time 6/20/11 1600	Received By/Stored In JV Fullmer	Date/Time 1600 6/20/11
Relinquished By/Removed From JV Fullmer	Date/Time 1705 6-20-11	Received By/Stored In 1060, #1 A. Freier	Date/Time 1705 6-20-11
Relinquished By/Removed From WCH A. Freier 1060, #1	Date/Time 0950 6-21-11	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-22-11 1000	Received By/Stored In	Date/Time 6-22-11 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta

REVIEWED BY CMB DATE 6/21/11

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

000000016

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford

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

Date: 6-22-11

LvL Batch #: 1106076

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier: FedEx		Airbill # 7972 2808 4426
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.5 °C		Cooler # WCH-11-032
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 _____

LVL
LIONVILLE LABORATORY
A division of Fberline Analytical Corporation

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

RECEIVED
JUL 2011

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 07/03/2011 08:37

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1JW30	1106076-01	Soil	06/20/2011 14:50	06/22/2011 10:00
J1JW31	1106076-02	Soil	06/20/2011 15:30	06/22/2011 10:00

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

Case Narrative

Client: WC-HANFORD RC-029 K3418
LVL #: 1106076

W.O. #: 60049-001-001-0001-00
Date Received: 06-22-2011

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Two (2) soil samples were collected on 06-20-2011.

The samples and associated QC samples were extracted 06-24-2011 and analyzed 06-29-2011 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 samples 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 limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. Twenty-two (22) of thirty-two (32) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (#11GC118) has been enclosed.
7. One (1) sample required instrument dilutions due to high concentrations of target analytes. The sample J1JW30 and its associated MS/MSD required a 20-fold instrument dilution. Reporting limits have been adjusted to reflect the necessary dilutions.
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 samples were reported on a dry weight 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 14 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 11GC118

Initiator: Catherine Carey
Date: 07/03/11
Client: WC Hanford

Batch: 11060076
Samples: MS + MSD
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: Solid
Prep Batch: L10622I

1. Reason for SDR

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

b. General Discrepancy

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

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

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

several spike recoveries outside QC limits
matrix

2. Known or Probable Causes(s)

high concentration of target analytes in sample

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: [signature] 7/5/11

✓ 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: [signature] 7-5-11

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

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

7/6/11
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.

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-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 07/03/2011 08:37

J1JW30
1106076-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	71.0 U	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Acenaphthylene	275 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Acenaphthene	2240 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Fluorene	200 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Phenanthrene	4140 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Anthracene	47.1 J, D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Fluoranthene	6620 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Indeno[1,2,3-cd]pyrene	1350 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Pyrene	3830 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Benz[a]anthracene	829 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Chrysene	1300 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Benzo[b] fluoranthene	2030 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Benzo[k] fluoranthene	1090 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Benzo[a] pyrene	2080 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Dibenz[a,h]anthracene	286 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Benzo[g,h,i] perylene	1620 D	71.0	ug/kg dry	20	L106221	06/24/2011	06/29/2011	8310
Surrogate: Triphenylene	*127 %*	*68-129*			*L106221*	*06/24/2011*	*06/29/2011*	*8310*

D

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 07/03/2011 08:37

J1JW31
1106076-02 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.38 U	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Acenaphthylene	19.9	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Acenaphthene	2.06 J	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Fluorene	3.38 U	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Phenanthrene	13.9	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Anthracene	3.38 U	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Fluoranthene	30.0	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Indeno[1,2,3-cd]pyrene	10.5	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Pyrene	26.0	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Benz[a]anthracene	8.73	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Chrysene	9.01	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Benzo[b] fluoranthene	13.6	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Benzo[k] fluoranthene	6.99	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Benzo[a] pyrene	14.5	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Dibenz[a,h]anthracene	2.21 J	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Benzo[g,h,i] perylene	10.7	3.38	ug/kg dry	1	L106221	06/24/2011	06/29/2011	8310
Surrogate: Triphenylene	*104 %*	*68-129*			*L106221*	*06/24/2011*	*06/29/2011*	*8310*

ch

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2011 08:37

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 L106221 - SW 3540C									
Blank (L106221-BLK1)			Prepared: 06/24/2011 Analyzed: 06/29/2011						
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	*169*		*ug/kg wet*	*166.67*		*102*	*68-129*		
LCS (L106221-BS1)			Prepared: 06/24/2011 Analyzed: 06/29/2011						
Naphthalene	158	3.33	ug/kg wet	166.67		95	0-127		40
Acenaphthylene	145	3.33	ug/kg wet	166.67		87	50-140		40
Acenaphthene	160	3.33	ug/kg wet	166.67		96	17-139		40
Fluorene	159	3.33	ug/kg wet	166.67		95	28-145		40
Phenanthrene	156	3.33	ug/kg wet	166.67		93	30-152		40
Anthracene	161	3.33	ug/kg wet	166.67		97	19-171		40
Fluoranthene	160	3.33	ug/kg wet	166.67		96	34-159		40
Indeno[1,2,3-cd]pyrene	167	3.33	ug/kg wet	166.67		100	31-156		40
Pyrene	161	3.33	ug/kg wet	166.67		97	33-152		40
Benz[a]anthracene	171	3.33	ug/kg wet	166.67		102	32-157		40
Chrysene	180	3.33	ug/kg wet	166.67		108	31-159		40
Benzo[b] fluoranthene	170	3.33	ug/kg wet	166.67		102	33-164		40
Benzo[k] fluoranthene	167	3.33	ug/kg wet	166.67		100	28-161		40
Benzo[a] pyrene	170	3.33	ug/kg wet	166.67		102	29-149		40
Dibenz[a,h]anthracene	169	3.33	ug/kg wet	166.67		101	27-153		40
Benzo[g,h,i] perylene	164	3.33	ug/kg wet	166.67		98	32-157		40
Surrogate: Triphenylene	*189*		*ug/kg wet*	*166.67*		*114*	*68-129*		

LIONVILLE LABORATORY
A division of Pioneer Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2011 08:37

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 L106221 - SW 3540C										
Matrix Spike (L106221-MS1)		**Source: 1106076-01**		**Prepared: 06/24/2011 Analyzed: 06/29/2011**						
Naphthalene	205	D	71.0	ug/kg dry	177.61	71.0 U	115	0-127		40
Acenaphthylene	493	D	71.0	ug/kg dry	177.61	275	123	50-140		40
Acenaphthene	1760	D	71.0	ug/kg dry	177.61	2240	-274*	17-139		40
Fluorene	324	D	71.0	ug/kg dry	177.61	200	69	28-145		40
Phenanthrene	3570	D	71.0	ug/kg dry	177.61	4140	-320*	30-152		40
Anthracene	169	D	71.0	ug/kg dry	177.61	47.1	68	19-171		40
Fluoranthene	5710	D	71.0	ug/kg dry	177.61	6620	-515*	34-159		40
Indeno[1,2,3-cd]pyrene	1200	D	71.0	ug/kg dry	177.61	1350	-86*	31-156		40
Pyrene	3790	D	71.0	ug/kg dry	177.61	3830	-23*	33-152		40
Benz[a]anthracene	1010	D	71.0	ug/kg dry	177.61	829	101	32-157		40
Chrysene	1470	D	71.0	ug/kg dry	177.61	1300	91	31-159		40
Benzo[b] fluoranthene	1960	D	71.0	ug/kg dry	177.61	2030	-42*	33-164		40
Benzo[k] fluoranthene	1100	D	71.0	ug/kg dry	177.61	1090	4*	28-161		40
Benzo[a] pyrene	1920	D	71.0	ug/kg dry	177.61	2080	-85*	29-149		40
Dibenz[a,h]anthracene	382	D	71.0	ug/kg dry	177.61	286	54	27-153		40
Benzo[g,h,i] perylene	1530	D	71.0	ug/kg dry	177.61	1620	-49*	32-157		40
Surrogate: Triphenylene	*206*			*ug/kg dry*	*177.61*		*116*	*68-129*		
Matrix Spike Dup (L106221-MSD1)		**Source: 1106076-01**		**Prepared: 06/24/2011 Analyzed: 06/29/2011**						
Naphthalene	80.7	D	70.1	ug/kg dry	175.37	71.0 U	46	0-127	86*	40
Acenaphthylene	426	D	70.1	ug/kg dry	175.37	275	86	50-140	35	40
Acenaphthene	1360	D	70.1	ug/kg dry	175.37	2240	-506*	17-139	-59	40
Fluorene	243	D	70.1	ug/kg dry	175.37	200	24*	28-145	96*	40
Phenanthrene	2200	D	70.1	ug/kg dry	175.37	4140	-1110*	30-152	-111	40
Anthracene	161	D	70.1	ug/kg dry	175.37	47.1	65	19-171	5	40
Fluoranthene	3570	D	70.1	ug/kg dry	175.37	6620	-1740*	34-159	-109	40
Indeno[1,2,3-cd]pyrene	838	D	70.1	ug/kg dry	175.37	1350	-294*	31-156	-109	40
Pyrene	2320	D	70.1	ug/kg dry	175.37	3830	-863*	33-152	-190	40
Benz[a]anthracene	794	D	70.1	ug/kg dry	175.37	829	-20*	32-157	297*	40
Chrysene	1120	D	70.1	ug/kg dry	175.37	1300	-104*	31-159	-3060	40
Benzo[b] fluoranthene	1300	D	70.1	ug/kg dry	175.37	2030	-417*	33-164	-164	40
Benzo[k] fluoranthene	740	D	70.1	ug/kg dry	175.37	1090	-199*	28-161	-209	40
Benzo[a] pyrene	1330	D	70.1	ug/kg dry	175.37	2080	-424*	29-149	-133	40
Dibenz[a,h]anthracene	301	D	70.1	ug/kg dry	175.37	286	9*	27-153	143*	40
Benzo[g,h,i] perylene	1060	D	70.1	ug/kg dry	175.37	1620	-319*	32-157	-146	40
Surrogate: Triphenylene	*169*			*ug/kg dry*	*175.37*		*97*	*68-129*		

PREPARATION BENCH SHEET

L106221

Lionville Laboratory

Printed: 6/28/2011 8:50:07PM

00000010

Matrix: Solid **Prepared using: HPLC - SW 3540C** **Surrogate used: 1100442**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1106076-01	8310 PAH	06/24/2011 09:20	30.012	5				50	WC-Hanford, Inc.	
1106076-02	8310 PAH	06/24/2011 09:20	30.49	5				50	WC-Hanford, Inc.	
1106078-01	8310 PAH	06/24/2011 09:20	30.07	10				50	WC-Hanford, Inc.	
1106086-01	8310 PAH	06/24/2011 09:20	30.43	5				50	WC-Hanford, Inc.	
1106086-02	8310 PAH	06/24/2011 09:20	30.32	5				50	WC-Hanford, Inc.	
L106221-BLK1	QC	06/24/2011 09:20	30	5				50		
L106221-BS1	QC	06/24/2011 09:20	30	5	1100443		50	50		
L106221-MS1	QC	06/24/2011 09:20	30.025	5	1100443	1106076-01	50	50		
L106221-MS2	QC	06/24/2011 09:20	15.66	10	1100443	1106078-01	50	50		
L106221-MS3	QC	06/24/2011 09:20	15.23	5	1100443	1106086-01	50	50		
L106221-MSD1	QC	06/24/2011 09:20	30.41	5	1100443	1106076-01	50	50		
L106221-MSD2	QC	06/24/2011 09:20	14.63	10	1100443	1106078-01	50	50		
L106221-MSD3	QC	06/24/2011 09:20	15.09	5	1100443	1106086-01	50	50		

Extracts Relinquished By 6/28/11 20:50 Date

Extracts Received By 06/29/11 9:30 Date

Lionville Laboratory Use Only

1106076

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-029
Est. Final Proj. Sampling Date
Project#
Project Contact/Phone#
Lionville Laboratory Project Manager Charlotte Johnson
QC SW Del SW TAT 15 days

Date Rec'd 6-22-11 Date Due 7-07-11

		A			B		C							
Refrigerator #		2			2		2							
#/Type Container	Liquid													
	Solid	1aq1			1aq1		1aq1							
Volume	Liquid													
	Solid	120			60		60							
Preservatives		—			—		—							
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb	PAHs 8310			INORG: Metal	CN	Cr+6				

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
01	J1JW30			S	6-20-11	1450					X			X		X					
02	J1JW31			J	J	1530					X			X		X					

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	6-22-11	10:00

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

1100000011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-116	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5		SAF No. RC-029
Ice Chest No. ~~NA~~ AJ 6-20-11 WCH-11-032	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100 765		Bill of Lading/Air Bill No. ~~NA~~ AJ 6-20-11 See OSPC

000000012

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	aG	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J1JW30	SOIL	6/20/11	1450	X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Whitney Sexsmith	6/20/11 1600	JV Fuller	6/20/11 1600
JV Fuller	6-20-11 1705	A. Freier (1060, #1)	6-20-11 1705
A. Freier (WCH 1060, #1)	6-21-11 0950	Fed Ex	
Fed Ex	6.22.11 1000	[illegible]	6.22.11 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta

REVIEWED BY CMB DATE 6/21/11

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

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-117	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5		SAF No. RC-029
Ice Chest No. NA AJ 6-20-11 WCH-11-032	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100765		Bill of Lading/Air Bill No. NA AJ 6-20-11 See OSPC

00000013

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	aG	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J1JW31	SOIL	6/20/11	1530	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Whitney Sexsmith	Date/Time 6/20/11 1600	Received By/Stored In JV Fullmer	Date/Time 1600 6/20/11
Relinquished By/Removed From JV Fullmer	Date/Time 1705 6-20-11	Received By/Stored In 1060, #1 A. Freier	Date/Time 1705 6-20-11
Relinquished By/Removed From WCH A. Freier 1060, #1	Date/Time 0950 6-21-11	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-22-11 1000	Received By/Stored In D.S. Smith	Date/Time 6-22-11 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta

REVIEWED BY CMB DATE 6/21/11

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

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

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford

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

Date: 6-22-11

LvL Batch #: 1106076

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier: Fed Ex		Airbill # 7972 2808 4426
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.5	°C	Cooler # WCH-11-032
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 _____

000000014

SR-002-B.doc

LIONVILLE LABORATORY
A division of Iberdrola Analytical Corporation

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

RECEIVED
JUL 2011

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 06/29/2011 15:44

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1JW30	1106076-01	Soil	06/20/2011 14:50	06/22/2011 10:00
J1JW31	1106076-02	Soil	06/20/2011 15:30	06/22/2011 10:00

LIONVILLE LABORATORY
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Case Narrative

Client: WC-HANFORD RC-029 K3418
LVL#: 1106076 **Date Received:** 06-22-11

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

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

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

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

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

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

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

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

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

7/5/11
Date

njp\i06-076

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

LIONVILLE LABORATORY
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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/29/2011 15:44

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
Dry	Sample results reported on a dry weight basis
Wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3418	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/29/2011 15:44

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1JW30 (1106076-01) Soil								
%Solids	93.8	0.1	% by Weight	1	L106207	06/22/2011	06/22/2011	SM2540G
Hexavalent Chromium	0.53 U	0.53	mg/kg dry	1	L106214	06/23/2011	06/27/2011	SW846 7196A
J1JW31 (1106076-02) Soil								
%Solids	97.1	0.1	% by Weight	1	L106207	06/22/2011	06/22/2011	SM2540G
Hexavalent Chromium	0.52 U	0.52	mg/kg dry	1	L106214	06/23/2011	06/27/2011	SW846 7196A

LIONVILLE LABORATORY
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3418 Project Manager: Joan Kessner	Reported: 06/29/2011 15:44

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L106207 - % Solids									
Duplicate (L106207-DUP3)		**Source: 1106076-01**	Prepared & Analyzed: 06/22/2011						
%Solids	92.7	0.1	% by Weight		93.8			1	20
Batch L106214 - Default Prep GenChem									
Blank (L106214-BLK1)			Prepared: 06/23/2011 Analyzed: 06/27/2011						
Hexavalent Chromium	0.50 U	0.50	mg/kg wet						
LCS (L106214-BS1)			Prepared: 06/23/2011 Analyzed: 06/27/2011						
Hexavalent Chromium	3.76	0.50	mg/kg wet	4.0000		94	80-120		
LCS (L106214-BS2)			Prepared: 06/23/2011 Analyzed: 06/27/2011						
Hexavalent Chromium	988 D	50.0	mg/kg wet	1146.3		86	80-120		
Duplicate (L106214-DUP1)		**Source: 1106076-02**	Prepared: 06/23/2011 Analyzed: 06/27/2011						
Hexavalent Chromium	0.52 U	0.52	mg/kg dry		0.52 U				20
Matrix Spike (L106214-MS1)		**Source: 1106076-02**	Prepared: 06/23/2011 Analyzed: 06/27/2011						
Hexavalent Chromium	3.57	0.52	mg/kg dry	4.1211	0.52 U	87	75-125		
Matrix Spike (L106214-MS2)		**Source: 1106076-02**	Prepared: 06/23/2011 Analyzed: 06/27/2011						
Hexavalent Chromium	1040 D	51.5	mg/kg dry	1187.7	0.52 U	87	75-125		

Lionville Laboratory Use Only

1106076

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
A Division of Eberline Analytical Corporation

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client W.C. Hanford SAF# RC-029
Est. Final Proj. Sampling Date
Project#
Project Contact/Phone#
Lionville Laboratory Project Manager Charlotte Johnson
QC SW Del SLL TAT 15 days

Date Rec'd 6-22-11 Date Due 7-07-11

		A							B		C					
Refrigerator #		2							2		2					
#/Type Container	Liquid															
	Solid	1aq1							1aq1		1aq1					
Volume	Liquid															
	Solid	120							60		60					
Preservatives		—							—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	PAHs 8310			Metal	CN	Cr+6					

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
01	J1JW30			S	6-20-11	1450					X			X		X					
02	J1JW31			J	J	1530					X			X		X					

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	6-22-11	10:00

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-116	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5		SAF No. RC-029
Ice Chest No. ~~NA~~ A4 6-20-11 WCH-11-032	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100 765		Bill of Lading/Air Bill No. ~~NA~~ 04 6-20-11 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	aG	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J1JW30	SOIL	6/20/11	1450	X	X	X					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From Whitney Sexsmith	6/20/11 1600	Received By/Stored In JV Fullmer	6/20/11 1600
Relinquished By/Removed From JV Fullmer	6-20-11 1705	Received By/Stored In A. Freier (1060, #1)	6-20-11 1705
Relinquished By/Removed From A. Freier (WCH 1060, #1)	6-21-11 0950	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex	6-22-11 1000	Received By/Stored In [illegible]	6-22-11 10:00
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta

REVIEWED BY CMB DATE 6/21/11

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

000000007

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-117	Page 1 of 1

Collector W. Sexsmith	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-H-51:5		SAF No. RC-029
Ice Chest No. NA-AJ 6-20-11 WCH-11-032	Field Logbook No. EL-1601-05	COA C10H531W00	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A100765		Bill of Lading/Air Bill No. NA-AJ 6-20-11 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	None							
Type of Container	G/P	G/P	G	G/P							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	500mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PAHs - 8310	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J1JW31	SOIL	6/20/11	1530	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Whitney Sexsmith	Date/Time 6/20/11 1600	Received By/Stored In JV Fullmer	Date/Time 1600 6/20/11
Relinquished By/Removed From JV Fullmer	Date/Time 1705 6-20-11	Received By/Stored In 1060, #1 A. Freier	Date/Time 1705 6-20-11
Relinquished By/Removed From WCH A. Freier 1060, #1	Date/Time 0950 6-21-11	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-22-11 1000	Received By/Stored In D. Smith	Date/Time 6-22-11 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta

REVIEWED BY CMB DATE 6/21/11

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

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford Date: 6-22-11

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

LvL Batch #: 1106076 Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier [illegible]		Airbill # 7972 2808 4426
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.5	°C	Cooler # WCH-11-032
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 _____