

**SAF-RC-108**  
**100-H Remaining Sites Burial Grounds –**  
**Other Solid Quick Turn**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt H4-21

KW 9/23/08  
INITIAL/DATE

**COMMENTS:**

**SDG K1314**

**SAF-RC-108**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Waste Site: 118-H-1, Trench B vacuum drum**

**RECEIVED**  
OCT 08 2008  
EDMC



# EBERLINE

SERVICES

EBERLINE ANALYTICAL CORPORATION  
2030 Wright Avenue  
Richmond, California 94804-3949  
Phone (510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
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September 19, 2008

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



Reference: **P.O. #S00W235A00**  
**Eberline Services R8-09-021-7880, SDG K1314**

Dear Ms. Kessner:

Enclosed is the data report for two solid (other solid) samples designated under SAF No. RC-108 received at Eberline Services on September 4, 2008. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion  
Senior Program Manager

MCM/njv

Enclosure: Data Package

## 1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1314 was composed of two solid (other solid) samples designated under SAF No. RC-108 with a Project Designation of: 100-H Remaining Sites Burial Grounds-other Solid Quick Turn.

Due to the activities of the samples small aliquots were taken for chemistry. Aliquots were taken on a per sample basis; results are reported in pCi/sample.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on August 19, 2008.

## 2.0 ANALYSIS NOTES

### 2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

### 2.2 Tritium Analysis

No problems were encountered during the course of the analyses.

### 2.3 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

### 2.4 Isotopic Plutonium Analysis

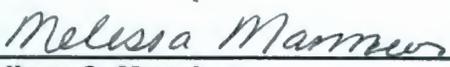
No problems were encountered during the course of the analyses.

### 2.5 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

## 3.0 Case Narrative Certification Statement

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

  
\_\_\_\_\_  
Melissa C. Mannion  
Senior Program Manager

09/19/08  
\_\_\_\_\_  
Date

EBRLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP K1314

SDG 7880  
Contact Melissa C. Mannion

Client Hanford  
Contract No. S00W235A00  
Case no SDG\_K1314

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

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Prepared by

*[Signature]*

*Melissa Mannion*

Reviewed by

Lab id EBRLNE  
Protocol Hanford1  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 09/19/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1314

SDG 7880  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. S00W235A00  
Case no SDG K1314

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford1  
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Form DVD-RG  
Version 3.06  
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1314

SDG 7880  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. S00W235A00  
Case no SDG\_K1314

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.

REPORT GUIDES

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Lab id EBRLNE  
Protocol Hanford1  
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Form DVD-RG  
Version 3.06  
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1314

SDG 7880

Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford

Contract No. S00W235A00

Case no SDG K1314

LAB	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R809021-01	J17HH9	118H1 Trench B Vac Drum	OTHER		RC-108	RC-108-001	08/28/08 11:00
R809021-02	J17HJ0	118H1 Trench B Vac Drum	OTHER		RC-108	RC-108-001	08/28/08 11:00
R809021-03	Lab Control Sample		OTHER		RC-108		
R809021-04	Method Blank		OTHER		RC-108		
R809021-05	Duplicate (R809021-01)	118H1 Trench B Vac Drum	OTHER		RC-108		08/28/08 11:00
R809021-06	Duplicate (R809021-01)	118H1 Trench B Vac Drum	OTHER		RC-108		08/28/08 11:00

LAB SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LS

Version 3.06

Report date 09/19/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

SDG 7880  
 Contact Melissa C. Mannion

**QC SUMMARY**

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1314

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL. SAMPLE ID	DEPARTMENT SAMPLE ID
7880	RC-108-001	J17HH9	OTHER	100.0	0.169 g		09/04/08 7	R809021-01	7880-001
		J17HJ0	OTHER	100.0	0.164 g		09/04/08 7	R809021-02	7880-002
		Method Blank	OTHER					R809021-04	7880-004
		Lab Control Sample	OTHER					R809021-03	7880-003
		Duplicate (R809021-01)	OTHER	100.0	0.169 g		09/04/08 7	R809021-05	7880-005
		Duplicate (R809021-01)	OTHER	100.0	0.169 g		09/04/08 7	R809021-06	7880-006

QC SUMMARY

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 Form DVD-QS  
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

SDG 7880  
 Contact Melissa C. Mannion

**PREP BATCH SUMMARY**

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1314

TEST	MATRIX	METHOD	PREPARATION ERROR			PLANCHETS ANALYZED			QUALI-
			BATCH	2σ %	CLIENT MORE	RE BLANK	LCS	DUP/ORIG MS/ORIG	
<b>Alpha Spectroscopy</b>									
PU	OTHER	Plutonium, Isotopic in Solids	6169-027	8.0	2	1	1	1/1	
<b>Gas Proportional Counting</b>									
93A	OTHER	Gross Alpha	6169-027	20.6	2	1	1	1/1	
93B	OTHER	Gross Beta	6169-027	11.0	2	1	1	1/1	
<b>Gamma Spectroscopy</b>									
GAM	OTHER	Gamma Scan	6169-027	7.0	2	1	1	1/1	
<b>Liquid Scintillation Counting</b>									
C	OTHER	Carbon 14 in Solids	6169-027	10.0	2	1	1	1/1	
H	OTHER	Tritium in Solids	6169-027	10.0	2	1	1	1/1	

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

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

SDG 7880  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1314

**LAB WORK SUMMARY**

LAB SAMPLE	CLIENT SAMPLE ID										
COLLECTED	LOCATION	MATRIX			SUF-						
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FLX	ANALYZED	REVIEWED	BY	METHOD		
R809021-01	J17HH9		7880-001	93A/93		09/10/08	09/11/08	BW	Gross Alpha		
08/28/08	118H1 Trench B Vac Drum	OTHER	7880-001	93B/93		09/10/08	09/11/08	BW	Gross Beta		
09/04/08	RC-108-001	RC-108	7880-001	C		09/15/08	09/17/08	BW	Carbon 14 in Solids		
			7880-001	GAM		09/10/08	09/11/08	CSS	Gamma Scan		
			7880-001	H		09/16/08	09/18/08	BW	Tritium in Solids		
			7880-001	PU		09/11/08	09/15/08	BW	Plutonium, Isotopic in Solids		
R809021-02	J17HJ0		7880-002	93A/93		09/10/08	09/11/08	BW	Gross Alpha		
08/28/08	118H1 Trench B Vac Drum	OTHER	7880-002	93B/93		09/10/08	09/11/08	BW	Gross Beta		
09/04/08	RC-108-001	RC-108	7880-002	C		09/15/08	09/17/08	BW	Carbon 14 in Solids		
			7880-002	GAM		09/10/08	09/11/08	CSS	Gamma Scan		
			7880-002	H		09/16/08	09/18/08	BW	Tritium in Solids		
			7880-002	PU		09/12/08	09/15/08	BW	Plutonium, Isotopic in Solids		
R809021-03	Lab Control Sample		7880-003	93A/93		09/10/08	09/11/08	BW	Gross Alpha		
		OTHER	7880-003	93B/93		09/10/08	09/11/08	BW	Gross Beta		
		RC-108	7880-003	C		09/16/08	09/17/08	BW	Carbon 14 in Solids		
			7880-003	GAM		09/10/08	09/11/08	CSS	Gamma Scan		
			7880-003	H		09/16/08	09/18/08	BW	Tritium in Solids		
			7880-003	PU		09/12/08	09/15/08	BW	Plutonium, Isotopic in Solids		
R809021-04	Method Blank		7880-004	93A/93		09/10/08	09/11/08	BW	Gross Alpha		
		OTHER	7880-004	93B/93		09/10/08	09/11/08	BW	Gross Beta		
		RC-108	7880-004	C		09/15/08	09/17/08	BW	Carbon 14 in Solids		
			7880-004	GAM		09/10/08	09/11/08	CSS	Gamma Scan		
			7880-004	H		09/16/08	09/18/08	BW	Tritium in Solids		
			7880-004	PU		09/12/08	09/15/08	BW	Plutonium, Isotopic in Solids		
R809021-05	Duplicate (R809021-01)		7880-005	93A/93		09/10/08	09/11/08	BW	Gross Alpha		
08/28/08	118H1 Trench B Vac Drum	OTHER	7880-005	93B/93		09/10/08	09/11/08	BW	Gross Beta		
09/04/08		RC-108	7880-005	C		09/15/08	09/17/08	BW	Carbon 14 in Solids		
			7880-005	H		09/16/08	09/18/08	BW	Tritium in Solids		
			7880-005	PU		09/12/08	09/15/08	BW	Plutonium, Isotopic in Solids		
R809021-06	Duplicate (R809021-01)		7880-006	GAM		09/10/08	09/11/08	CSS	Gamma Scan		
08/28/08	118H1 Trench B Vac Drum	OTHER									
09/04/08		RC-108									

WORK SUMMARY

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

SDG 7880  
 Contact Melissa C. Mannion

**WORK SUMMARY, cont.**

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1314

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-108	Gross Alpha	900.0_ALPHABETA_GPC	2			1	1	1	5
93B/93	RC-108	Gross Beta	900.0_ALPHABETA_GPC	2			1	1	1	5
C	RC-108	Carbon 14 in Solids	C14_COX_LSC	2			1	1	1	5
GAM	RC-108	Gamma Scan	GAMMA_GS	2			1	1	1	5
H	RC-108	Tritium in Solids	TRITIUM_COX_LSC	2			1	1	1	5
PU	RC-108	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5
<b>TOTALS</b>				<b>12</b>			<b>6</b>	<b>6</b>	<b>6</b>	<b>30</b>

WORK SUMMARY

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 Protocol Hanford1  
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 Form DVD-LWS  
 Version 3.06  
 Report date 09/19/08

**EBERLINE SERVICES / RICHMOND**

SAMPLE DELIVERY GROUP K1314

7880-004

Method Blank

**METHOD BLANK**

SDG <u>7880</u>	Client/Case no <u>Hanford</u>	SDG <u>K1314</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
Lab sample id <u>R809021-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7880-004</u>	Material/Matrix _____	<u>OTHER</u>
	SAF No <u>RC-108</u>	

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.805	1.4	3.14	10.0	U	93A
Gross Beta	12587-47-2	0.811	2.0	3.28	15.0	U	93B
Tritium	10028-17-8	-87.9	200	345	400	U	H
Carbon 14	14762-75-5	34.9	160	<u>274</u>	50.0	U	C
Plutonium 238	13981-16-3	-0.181	0.36	<u>1.11</u>	1.00	U	PU
Plutonium 239/240	PU-239/240	0.090	0.18	0.691	1.00	U	PU
Potassium 40	13966-00-2	U		229		U	GAM
Cobalt 60	10198-40-0	U		<u>14.1</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>12.1</u>	0.100	U	GAM
Radium 226	13982-63-3	U		<u>33.9</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>53.0</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>32.6</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>35.2</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>27.2</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		18.0		U	GAM
Thorium 232	TH-232	U		53.0		U	GAM
Uranium 235	15117-96-1	U		40.9		U	GAM
Uranium 238	U-238	U		1480		U	GAM
Americium 241	14596-10-2	U		46.0		U	GAM

100H RemainSitesBurialGrnds-OSolidQT

QC-BLANK #67171

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

7880-003

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7880</u> Contact <u>Melissa C. Mannion</u>  Lab sample id <u>R809021-03</u> Dept sample id <u>7880-003</u>	Client/Case no <u>Hanford</u> <u>SDG K1314</u> Contract No. <u>S00W235A00</u>  Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>OTHER</u> SAF No <u>RC-108</u>
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ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/smpl	(COUNT)	pCi/smpl	pCi/smpl	FIERS	TEST	pCi/smpl	pCi/smpl	%	(TOTAL) LIMITS
Gross Alpha	101	16	7.59	10.0		93A	102	4.1	99	61-139 70-130
Gross Beta	94.7	7.3	5.18	15.0		93B	92.6	3.7	102	79-121 70-130
Tritium	48200	1000	360	400		H	48400	1900	100	84-116 80-120
Carbon 14	127000	1200	<u>277</u>	50.0		C	128000	5100	99	84-116 80-120
Plutonium 238	73.3	6.3	0.727	1.00		PU	78.0	3.1	94	82-118 80-120
Plutonium 239/240	84.2	7.0	0.504	1.00		PU	88.0	3.5	96	82-118 80-120
Cobalt 60	713	24	<u>12.3</u>	0.050		GAM	697	28	102	87-113 80-120
Cesium 137	802	22	<u>14.8</u>	0.100		GAM	777	31	103	87-113 80-120

100H RemainSitesBurialGrnds-OSolidQT

QC-LCS #67170
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Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>09/19/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

7880-005

J17HH9

**DUPLICATE**

SDG <u>7880</u>	Client/Case no <u>Hanford</u>	<u>SDG K1314</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>	
Lab sample id <u>R809021-05</u>	Lab sample id <u>R809021-01</u>	Client sample id <u>J17HH9</u>
Dept sample id <u>7880-005</u>	Dept sample id <u>7880-001</u>	Location/Matrix <u>118H1 Trench B Vac Drum</u> <u>OTHER</u>
	Received <u>09/04/08</u>	Collected/Weight <u>08/28/08 11:00</u> <u>0.169 g</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>RC-108-001</u> <u>RC-108</u>

ANALYTE	DUPLICATE pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST	ORIGINAL pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	QUALI- FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	15.3	3.9	2.76	10.0		93A	14.4	6.8	5.80		6	90	0.2
Gross Beta	70.6	4.5	4.98	15.0		93B	73.5	6.5	5.15		4	29	0.4
Tritium	209	180	289	400	U	H	199	200	320	U	-		0.1
Carbon 14	2340	200	<u>228</u>	50.0		C	2480	220	<u>256</u>		6	28	0.6
Plutonium 238	2.41	1.0	<u>1.11</u>	1.00		PU	1.42	0.31	0.288		52	84	1.8
Plutonium 239/240	1.20	0.81	0.767	1.00		PU	1.64	0.29	0.144		31	92	1.0

100H RemainSitesBurialGrnds-OSolidQT

QC-DUP#1 67172

DUPLICATES

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SUMMARY DATA SECTION

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Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>09/19/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

7880-006

J17HH9

**DUPLICATE**

SDG <u>7880</u>	Client/Case no <u>Hanford</u>	SDG <u>K1314</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>	
Lab sample id <u>R809021-06</u>	Lab sample id <u>R809021-01</u>	Client sample id <u>J17HH9</u>
Dept sample id <u>7880-006</u>	Dept sample id <u>7880-001</u>	Location/Matrix <u>118H1 Trench B Vac Drum OTHER</u>
	Received <u>09/04/08</u>	Collected/Weight <u>08/28/08 11:00 0.169 g</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>RC-108-001 RC-108</u>

ANALYTE	DUPLICATE		MDA	RDL	QUALI-	ORIGINAL	2σ ERR		MDA	QUALI-	RPD	3σ	DER
	pCi/smpl	(COUNT)					pCi/smpl	(COUNT)					
Potassium 40	U		91.5		U	GAM	U		262	U	-		1.2
Cobalt 60	U		<u>19.4</u>	0.050	U	GAM	U		<u>34.7</u>	U	-		0.8
Cesium 137	<u>44.2</u>	9.1	<u>9.54</u>	0.100		GAM	50.7	23	<u>22.6</u>		14	80	0.5
Radium 226	U		<u>15.9</u>	0.100	U	GAM	U		<u>45.8</u>	U	-		1.2
Radium 228	U		<u>34.9</u>	0.200	U	GAM	U		<u>108</u>	U	-		1.3
Europium 152	U		<u>20.4</u>	0.100	U	GAM	U		<u>58.5</u>	U	-		1.2
Europium 154	U		<u>26.2</u>	0.100	U	GAM	U		<u>77.1</u>	U	-		1.2
Europium 155	U		<u>14.0</u>	0.100	U	GAM	U		<u>36.4</u>	U	-		1.1
Thorium 228	U		23.9		U	GAM	U		34.4	U	-		0.5
Thorium 232	U		34.9		U	GAM	U		108	U	-		1.3
Uranium 235	U		26.8		U	GAM	U		76.1	U	-		1.2
Uranium 238	U		1010		U	GAM	U		2750	U	-		1.2
Americium 241	U		8.99		U	GAM	U		26.5	U	-		1.2

100H RemainSitesBurialGrnds-OSolidQT

QC-DUP#1 67233

Lab id EBRLNE  
Protocol Hanford1  
Version Ver 1.0  
Form DVD-DUP  
Version 3.06  
Report date 09/19/08

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP K1314**

7880-001

J17HH9

**DATA SHEET**

SDG <u>7880</u>	Client/Case no <u>Hanford</u>	SDG <u>K1314</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
Lab sample id <u>R809021-01</u>	Client sample id <u>J17HH9</u>	
Dept sample id <u>7880-001</u>	Location/Matrix <u>118H1 Trench B Vac Drum</u>	<u>OTHER</u>
Received <u>09/04/08</u>	Collected/Weight <u>08/28/08 11:00</u>	<u>0.169 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-108-001</u>	<u>RC-108</u>

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	14.4	6.8	5.80	10.0		93A
Gross Beta	12587-47-2	73.5	6.5	5.15	15.0		93B
Tritium	10028-17-8	199	200	320	400	U	H
Carbon 14	14762-75-5	2480	220	<u>256</u>	50.0		C
Plutonium 238	13981-16-3	1.42	0.31	0.288	1.00		PU
Plutonium 239/240	PU-239/240	1.64	0.29	0.144	1.00		PU
Potassium 40	13966-00-2	U		262		U	GAM
Cobalt 60	10198-40-0	U		<u>34.7</u>	0.050	U	GAM
Cesium 137	10045-97-3	50.7	23	<u>22.6</u>	0.100		GAM
Radium 226	13982-63-3	U		<u>45.8</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>108</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>58.5</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>77.1</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>36.4</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		34.4		U	GAM
Thorium 232	TH-232	U		108		U	GAM
Uranium 235	15117-96-1	U		76.1		U	GAM
Uranium 238	U-238	U		2750		U	GAM
Americium 241	14596-10-2	U		26.5		U	GAM

100H RemainSitesBurialGrnds-OSolidQT

**DATA SHEETS**

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**SUMMARY DATA SECTION**

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/19/08</u>

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP K1314**

7880-002

J17HJ0

**D A T A   S H E E T**

SDG <u>7880</u>	Client/Case no <u>Hanford</u>	SDG <u>K1314</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
Lab sample id <u>R809021-02</u>	Client sample id <u>J17HJ0</u>	
Dept sample id <u>7880-002</u>	Location/Matrix <u>118H1 Trench B Vac Drum</u>	<u>OTHER</u>
Received <u>09/04/08</u>	Collected/Weight <u>08/28/08 11:00</u>	<u>0.164 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-108-001</u>	<u>RC-108</u>

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	8.79	4.6	4.29	10.0		93A
Gross Beta	12587-47-2	52.0	6.3	6.79	15.0		93B
Tritium	10028-17-8	42.4	160	273	400	U	H
Carbon 14	14762-75-5	529	140	<u>211</u>	50.0		C
Plutonium 238	13981-16-3	1.59	1.4	<u>2.18</u>	1.00	U	PU
Plutonium 239/240	PU-239/240	1.59	1.4	<u>1.74</u>	1.00	U	PU
Potassium 40	13966-00-2	U		830		U	GAM
Cobalt 60	10198-40-0	U		<u>33.5</u>	0.050	U	GAM
Cesium 137	10045-97-3	40.1	30	<u>29.8</u>	0.100		GAM
Radium 226	13982-63-3	U		<u>66.6</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>147</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>91.5</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>85.4</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>68.2</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		47.8		U	GAM
Thorium 232	TH-232	U		147		U	GAM
Uranium 235	15117-96-1	U		104		U	GAM
Uranium 238	U-238	U		3680		U	GAM
Americium 241	14596-10-2	U		108		U	GAM

100H RemainSitesBurialGrnds-OSolidQT

**DATA SHEETS**

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**SUMMARY DATA SECTION**

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/19/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

Test PU Matrix OTHER  
 SDG 7880  
 Contact Melissa C. Mannion

**LAB METHOD SUMMARY**

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1314

**RESULTS**

LAB	RAW	SUF-		Plutonium	Plutonium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240

Preparation batch 6169-027

R809021-01		7880-001	J17HH9	1.42	1.64
R809021-02		7880-002	J17HJ0	1.59 U	1.59 U
R809021-03		7880-003	Lab Control Sample	ok	ok
R809021-04		7880-004	Method Blank	U	U
R809021-05		7880-005	Duplicate (R809021-01)	ok	ok

Nominal values and limits from method	RDLs (pCi/smpl)	1.00	1.00
100H RemainsSitesBurialGrnds-OSolidQT			

**METHOD PERFORMANCE**

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT	SAMPLE ID	pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 6169-027    2σ prep error 8.0 %    Reference Lab Notebook #6169, pg. 27

R809021-01		J17HH9		0.288	0.150			72		774			14	09/11/08	09/11	SS-062
R809021-02		J17HJ0		<u>2.18</u>	0.200			37		144			15	09/11/08	09/12	SS-064
R809021-03		Lab Control Sample		0.727	0.150			80		145				09/11/08	09/12	SS-065
R809021-04		Method Blank		<u>1.11</u>	0.150			64		128				09/11/08	09/12	SS-027
R809021-05		Duplicate (R809021-01)		<u>1.11</u>	0.150			67		128			15	09/11/08	09/12	SS-028

Nominal values and limits from method	1.00	0.150	20-105	100	100	180
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PROCEDURES	REFERENCE	PUISO_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 12	

AVERAGES ± 2 SD	MDA	<u>1.08</u>	±	<u>1.40</u>
FOR 5 SAMPLES	YIELD	<u>64</u>	±	<u>33</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford1</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-LMS</u>
Version	<u>3.06</u>
Report date	<u>09/19/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

Test 93A Matrix OTHER  
 SDG 7880  
 Contact Melissa C. Mannion

**LAB METHOD SUMMARY**

GROSS ALPHA

GAS PROPORTIONAL COUNTING

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1314

**RESULTS**

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Preparation batch 6169-027				
R809021-01	93	7880-001	J17HH9	14.4
R809021-02	93	7880-002	J17HJ0	8.79
R809021-03	93	7880-003	Lab Control Sample	ok
R809021-04	93	7880-004	Method Blank	U
R809021-05	93	7880-005	Duplicate (R809021-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 10.0  
 100H RemainSitesBurialGrnds-OSolidQT

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	mg	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-027			2σ prep error 20.6 % Reference Lab Notebook #6169, pg. 27												
R809021-01	93	J17HH9	5.80	0.100			52	100				13	09/09/08	09/10	GRB-101
R809021-02	93	J17HJ0	4.29	0.100			30	100				13	09/09/08	09/10	GRB-103
R809021-03	93	Lab Control Sample	7.59	0.100			62	100					09/09/08	09/10	GRB-104
R809021-04	93	Method Blank	3.14	0.100			62	300					09/09/08	09/10	GRB-105
R809021-05	93	Duplicate (R809021-01)	2.76	0.100			50	300				13	09/09/08	09/10	GRB-107

Nominal values and limits from method 10.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0\_ALPHA\_BETA\_GPC  
 CP-070 Soil Dissolution, < 1.0g Aliquot, rev 7  
 CP-120 Gross Alpha and Gross Beta in Water, rev 6

AVERAGES ± 2 SD MDA 4.72 ± 3.99  
 FOR 5 SAMPLES RESIDUE 51 ± 26

Lab id EBRLNE  
 Protocol Hanford1  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 09/19/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

Test 93B Matrix OTHER  
 SDG 7880  
 Contact Melissa C. Mannion

**LAB METHOD SUMMARY**

GROSS BETA

GAS PROPORTIONAL COUNTING

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1314

**RESULTS**

LAB RAW SUF-  
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Gross Beta

Preparation batch 6169-027

R809021-01	93	7880-001	J17HH9	73.5
R809021-02	93	7880-002	J17HJ0	52.0
R809021-03	93	7880-003	Lab Control Sample	ok
R809021-04	93	7880-004	Method Blank	U
R809021-05	93	7880-005	Duplicate (R809021-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 15.0  
 100H RemainsSitesBurialGrnds-OSolidQT

**METHOD PERFORMANCE**

LAB RAW SUF- MDA ALIQ PREP DILU- RESID EFF COUNT FWHM DRIFT DAYS ANAL-  
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/smpl sample FAC TION mg % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 6169-027 2σ prep error 11.0 % Reference Lab Notebook #6169, pg. 27

R809021-01	93	J17HH9	5.15	0.100	52	100	13	09/09/08	09/10	GRB-101
R809021-02	93	J17HJ0	6.79	0.100	30	100	13	09/09/08	09/10	GRB-103
R809021-03	93	Lab Control Sample	5.18	0.100	62	100		09/09/08	09/10	GRB-104
R809021-04	93	Method Blank	3.28	0.100	62	300		09/09/08	09/10	GRB-105
R809021-05	93	Duplicate (R809021-01)	4.98	0.100	50	300	13	09/09/08	09/10	GRB-107

Nominal values and limits from method 15.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0\_ALPHABETA\_GPC  
 CP-070 Soil Dissolution, < 1.0g Aliquot, rev 7  
 CP-120 Gross Alpha and Gross Beta in Water, rev 6

AVERAGES ± 2 SD MDA 5.08 ± 2.49  
 FOR 5 SAMPLES RESIDUE 51 ± 26

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford1  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 09/19/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

Test GAM Matrix OTHER

SDG 7880

Contact Melissa C. Mannion

**LAB METHOD SUMMARY**

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford

Contract No. S00W235A00

Contract SDG K1314

**RESULTS**

LAB RAW SUP-  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 6169-027

R809021-01	7880-001	J17HH9	U	50.7
R809021-02	7880-002	J17HJ0	U	40.1
R809021-03	7880-003	Lab Control Sample	ok	ok
R809021-04	7880-004	Method Blank	U	U
R809021-06	7880-006	Duplicate (R809021-01)	- U	ok

Nominal values and limits from method RDLs (pCi/smpl) 0.050 0.100  
100H RemainsitesBurialGrnds-OSolidQT

**METHOD PERFORMANCE**

LAB RAW SUP- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-  
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/smpl sample FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 6169-027 2σ prep error 7.0 % Reference Lab Notebook #6169, pg. 27

R809021-01	J17HH9	<u>7110</u>	0.391	119	13	09/09/08	09/10	JR,07,00
R809021-02	J17HJ0	<u>7680</u>	0.446	120	13	09/09/08	09/10	JR,08,00
R809021-03	Lab Control Sample	<u>12.3</u>	0.300	910		09/09/08	09/10	JR,02,00
R809021-04	Method Blank	<u>2780</u>	0.300	910		09/09/08	09/10	JR,05,00
R809021-06	Duplicate (R809021-01)	<u>2070</u>	0.391	919	13	09/09/08	09/10	JR,07,00

Nominal values and limits from method 0.050 0.300 100 180

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

AVERAGES ± 2 SD MDA 3930 ± 6660  
FOR 5 SAMPLES YIELD \_\_\_\_\_ ± \_\_\_\_\_

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford1  
Version Ver 1.0  
Form DVD-LMS  
Version 3.06  
Report date 09/19/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

Test C Matrix OTHER  
 SDG 7880  
 Contact Melissa C. Mannion

**LAB METHOD SUMMARY**

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1314

**RESULTS**

LAB RAW SUF-  
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

Preparation batch 6169-027

R809021-01	7880-001	J17HH9	2480
R809021-02	7880-002	J17HJ0	529
R809021-03	7880-003	Lab Control Sample	ok
R809021-04	7880-004	Method Blank	U
R809021-05	7880-005	Duplicate (R809021-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 50.0  
 100H RemainsBurialGrnds-OSolidQT

**METHOD PERFORMANCE**

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-  
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/smpl sample FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 6169-027 2σ prep error 10.0 % Reference Lab Notebook #6169, pg. 27

R809021-01	J17HH9	256	0.0054	100	50	18	09/15/08	09/15	LSC-004
R809021-02	J17HJ0	211	0.0064	100	50	18	09/15/08	09/15	LSC-004
R809021-03	Lab Control Sample	277	0.0050	100	50		09/15/08	09/16	LSC-004
R809021-04	Method Blank	274	0.0050	100	50		09/15/08	09/15	LSC-004
R809021-05	Duplicate (R809021-01)	228	0.0060	100	50	18	09/15/08	09/15	LSC-004

Nominal values and limits from method 50.0 0.0050 10 180

PROCEDURES REFERENCE C14\_COX\_LSC  
 CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 249 ± 57.8  
 FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford1  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 09/19/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1314

Test H Matrix OTHER  
 SDG 7880  
 Contact Melissa C. Mannion

**LAB METHOD SUMMARY**  
 TRITIUM IN SOLIDS  
 LIQUID SCINTILLATION COUNTING

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1314

**RESULTS**

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Tritium
Preparation batch 6169-027					
R809021-01		7880-001	J17HH9		U
R809021-02		7880-002	J17HJ0		U
R809021-03		7880-003	Lab Control Sample		ok
R809021-04		7880-004	Method Blank		U
R809021-05		7880-005	Duplicate (R809021-01)	-	U

Nominal values and limits from method RDLs (pCi/smpl) 400  
 100H RemainsSitesBurialGrnds-OSolidQT

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-027 2σ prep error 10.0 % Reference Lab Notebook #6169, pg. 27															
R809021-01		J17HH9	320	0.0054			100		50			19	09/15/08	09/16	LSC-004
R809021-02		J17HJ0	273	0.0064			100		50			19	09/15/08	09/16	LSC-004
R809021-03		Lab Control Sample	360	0.0050			100		50				09/15/08	09/16	LSC-004
R809021-04		Method Blank	345	0.0050			100		50				09/15/08	09/16	LSC-004
R809021-05		Duplicate (R809021-01)	289	0.0060			100		50			19	09/15/08	09/16	LSC-004

Nominal values and limits from method 400 0.0050 25 180

PROCEDURES REFERENCE TRITIUM\_COX\_LSC  
 CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 317 ± 73.2  
 FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford1  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 09/19/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1314

SDG 7880  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. S00W235A00  
Case no SDG\_K1314

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.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford1  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 09/19/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1314

SDG 7880  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. S00W235A00  
Case no SDG\_K1314

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

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

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1314

SDG 7880  
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
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WORK SUMMARY

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

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

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

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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GUIDE, cont.

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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DATA SHEET

- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

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

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.  
  
If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

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

1. A fixed percentage specified in the protocol.

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DUPLICATE

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

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

- \* The first, computed limits for the recovery reflect:

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

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

2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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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.
  - \* Preparation 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.

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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

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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.

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Collector Shawn Homi	Company Contact Doug Bowers	Telephone No. 509 531-0701	Project Coordinator KESSNER, JH	Price Code RCF 3E	Data Turnaround 1 day 15 day
Project Designation 100-H Remaining Sites Burial Grounds - Other Solid Quick	Sampling Location 118-H-1 trench B vacumm drum	K1314 (7880)	SAF No. RC-108		
Ice Chest No. Fed Ex Box	Field Logbook No. EL 1627	COA R118H12600	Method of Shipment Fed Ex		

Shipped To: EBERLINE SERVICES / MONVILLE  
 Offsite Property No.: A080334  
 Bill of Lading/Air Bill No.: See OSPC

Special Handling and/or Storage	Preservation	None	None	None	None	None	None	None	None	None	None	None	None	None
	Type of Container	Poly Bag	poly bag											
	No. of Container(s)	1	1											
	Volume	1 Filter	1 Filter											

SAMPLE ANALYSIS				Carbon-14, Tritium - H3	GEA, AEA	Gross alpha/beta	Pu
Sample No.	Matrix *	Sample Date	Sample Time				

J17HH9	OTHER SOLID	8-28-08	1100	X	20529	Air-100H-08-0058								
J17HJ0	OTHER SOLID	8-28-08	1100	X	20550	Air-100H-08-0068								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From Shawn Homi	Date/Time 11-28-08 1100	Received By/Stored In Doug Bowers/Doug Bowers	Date/Time 8-28-08/1100
Relinquished By/Removed From Doug Bowers/Doug Bowers	Date/Time 8-28-08/1700	Received By/Stored In AIA 1060 Bldg	Date/Time 8-28-08/1700
Relinquished By/Removed From 1060/IA	Date/Time 9/2/08 0920	Received By/Stored In MZA MStankouch	Date/Time 9/2/08
Relinquished By/Removed From MZA MStankouch	Date/Time 9/2/08 0925	Received By/Stored In K. Eliason/Kim	Date/Time 9-2-08 0925
Relinquished By/Removed From K. Eliason/Kim	Date/Time 9-3-08 0830	Received By/Stored In MZA MStankouch	Date/Time SEP 03 2008
Relinquished By/Removed From MZA MStankouch	Date/Time 9/3/08 1100	Received By/Stored In Fed Ex	Date/Time 09/04/08 09:30

**SPECIAL INSTRUCTIONS**  
 Run RAD screen then forward to Eberline for C-14, H3, Gross alpha/beta, GEA and AEA. Samples have been stored in Rad con source locker and sample time will reflect when they were turned over to Project Analytical Lead.

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

**Matrix \***  
 S=Soil  
 SF=Soil/Fines  
 SL=Soil/Liquid  
 SL=Sludge  
 W=Water  
 O=Oil  
 A=Air  
 DS=Drum Solids  
 DL=Drum Liquids  
 T=Trash  
 WL=Wipe  
 L=Liquid  
 V=Vegetation  
 X=Other

<b>LABORATORY SECTION</b>	Received By FEB EX	Title FM	Date/Time 09/04/08 09:30
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method	Disposed By	Date/Time

JHC  
9/4/08

Client: W.C. HANFORD City MICHLAND State WA  
Date/Time received 09/04/08 09:30 CoC No. RC-108-001  
Container I.D. No. POX 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 X FILTERS
- 7 Number of containers per sample 1 (Or see CoC \_\_\_\_\_)
- 8 Samples are in correct container Yes [X] No [ ]
- 9 Paperwork agrees with samples? Yes [X] No [ ]
- 10 Samples have Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
- 11 Samples are In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
- 12 Samples are Preserved [ ] Not preserved [ ] pH \_\_\_\_\_ Preservative \_\_\_\_\_
- 13 Describe any anomalies

14 Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
15 Inspected by MFW Date 09/04/08 Time 10:45

Customer Sample No	Beta/Gamma cpm	Ion Chamber mR/hr	Wide	Customer Sample No	Beta/Gamma cpm	Ion Chamber mR/hr	Wide
<u>for shop uses</u>	<u>260</u>						

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
Beta/Gamma Meter Ser. No. 100482 Calibration date 10 JUL 08