0060981

SAF-B00-054
100-NR-1 TSD Sites
R. A. Sampling – Soil
FINAL DATA PACKAGE

E:MAIL RESULTS TO:

Rick Kerkow 372-8655 N/A
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow X5-60 BL 10/27
INITIAL/DATE

Jeanette Duncan BL
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG H2343 SAF-B00-054

X Rad only Chem only Rad & Chem

X Complete Partial

Waste Site: 116-N-1 RAWD-wet-blast

EBERLINE
SERVICES

October 20, 2003

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R3-09-099-7591, SDG H2343

Dear Ms. Kessner:

Enclosed is the data report for four soil samples designated under SAF No. B00-054 received at Eberline Services on September 18, 2003. 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

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2343 was composed of four soil samples designated under SAF No. B00-054 with a Project Designation of: 100-NR-1 TSD Sites R.A. Sampling-Soil.

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 BHI via e-Fax on October 9, 2003.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Tritium Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

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 Mannion

Melissa C. Mannion
Senior Program Manager

10/20/3

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2343

SDG	7591
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2343

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

Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

SDG 7591
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2343

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 Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/09/03

SDG 7591
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2343

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 Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

LAB SAMPLE SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2343

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R309099-01	J00Y91	100-NR-1 RAWD-wet-blast	SOLID		B00-054	B00-054-263	09/17/03 07:40
R309099-02	J00Y92	100-NR-1 RAWD-wet-blast	SOLID		B00-054	B00-054-263	09/17/03 07:50
R309099-03	J00Y93	100-NR-1 RAWD-wet-blast	SOLID		B00-054	B00-054-263	09/17/03 08:00
R309099-04	J00Y94	100-NR-1 RAWD-wet-blast	SOLID		B00-054	B00-054-263	09/17/03 08:10
R309099-05	Lab Control Sample		SOLID		B00-054		
R309099-06	Method Blank		SOLID		B00-054		
R309099-07	Duplicate (R309099-03)	100-NR-1 RAWD-wet-blast	SOLID		B00-054		09/17/03 08:00
R309099-08	Spike (R309099-03)	100-NR-1 RAWD-wet-blast	SOLID		B00-054		09/17/03 08:00

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

QC SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2343

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
7591	B00-054-263	J00Y91	SOLID	93.9	808.2 g		09/18/03	1	R309099-01	7591-001
		J00Y92	SOLID	91.8	847.7 g		09/18/03	1	R309099-02	7591-002
		J00Y93	SOLID	95.7	1028 g		09/18/03	1	R309099-03	7591-003
		J00Y94	SOLID	95.9	1025 g		09/18/03	1	R309099-04	7591-004
		Method Blank	SOLID						R309099-06	7591-006
		Lab Control Sample	SOLID						R309099-05	7591-005
		Duplicate (R309099-03)	SOLID	95.7	1028 g		09/18/03	1	R309099-07	7591-007
		Spike (R309099-03)	SOLID	95.7	1028 g		09/18/03	1	R309099-08	7591-008

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

PREP BATCH SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2343

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7078-128	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7078-128	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7078-128	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7078-128	10.0	4			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7078-128	20.0	4			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7078-128	15.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7078-128	15.0	4			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	7078-128	10.0	4			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7078-128	10.0	4			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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

SDG 7591
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2343

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309099-01	J00Y91			7591-001	93A/93		09/24/03	10/09/03	MWT	Gross Alpha in Soil
09/17/03	100-NR-1 RAWD-wet-blast		SOLID	7591-001	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
09/18/03	B00-054-263	B00-054		7591-001	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-001	GAM		10/06/03	10/09/03	MWT	Gamma Scan
				7591-001	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-001	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-001	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-001	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-001	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil
R309099-02	J00Y92			7591-002	93A/93		09/24/03	10/09/03	MWT	Gross Alpha in Soil
09/17/03	100-NR-1 RAWD-wet-blast		SOLID	7591-002	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
09/18/03	B00-054-263	B00-054		7591-002	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-002	GAM		10/06/03	10/09/03	MWT	Gamma Scan
				7591-002	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-002	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-002	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-002	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-002	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil
R309099-03	J00Y93			7591-003	93A/93		09/24/03	10/09/03	MWT	Gross Alpha in Soil
09/17/03	100-NR-1 RAWD-wet-blast		SOLID	7591-003	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
09/18/03	B00-054-263	B00-054		7591-003	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-003	GAM		10/06/03	10/09/03	MWT	Gamma Scan
				7591-003	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-003	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-003	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-003	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-003	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil
R309099-04	J00Y94			7591-004	93A/93		09/24/03	10/09/03	MWT	Gross Alpha in Soil
09/17/03	100-NR-1 RAWD-wet-blast		SOLID	7591-004	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
09/18/03	B00-054-263	B00-054		7591-004	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-004	GAM		10/06/03	10/09/03	MWT	Gamma Scan
				7591-004	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-004	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-004	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-004	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-004	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/09/03

SDG 7591
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2343

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309099-05	Lab Control Sample			7591-005	93A/93		09/24/03	10/09/03	MWT	Gross Alpha in Soil
			SOLID	7591-005	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
		B00-054		7591-005	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-005	GAM		10/07/03	10/09/03	MWT	Gamma Scan
				7591-005	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-005	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-005	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-005	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-005	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil
R309099-06	Method Blank			7591-006	93A/93		09/26/03	10/09/03	MWT	Gross Alpha in Soil
			SOLID	7591-006	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
		B00-054		7591-006	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-006	GAM		10/08/03	10/09/03	MWT	Gamma Scan
				7591-006	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-006	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-006	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-006	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-006	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil
R309099-07	Duplicate (R309099-03)			7591-007	93A/93		09/24/03	10/09/03	MWT	Gross Alpha in Soil
09/17/03	100-NR-1 RAWD-wet-blast		SOLID	7591-007	93B/93		09/26/03	10/09/03	MWT	Gross Beta in Soil
09/18/03		B00-054		7591-007	AM		09/29/03	10/09/03	MWT	Americium 241 in Soil
				7591-007	GAM		10/07/03	10/09/03	MWT	Gamma Scan
				7591-007	H		09/26/03	10/09/03	MWT	Tritium in Soil
				7591-007	NI_L		09/27/03	10/09/03	MWT	Nickel 63 in Soil
				7591-007	PU		09/30/03	10/09/03	MWT	Plutonium, Isotopic in Solids
				7591-007	SR		09/25/03	10/09/03	MWT	Total Strontium in Soil
				7591-007	U		09/24/03	10/09/03	MWT	Uranium, Isotopic in Soil
R309099-08	Spike (R309099-03)			7591-008	H		09/27/03	10/09/03	MWT	Tritium in Soil
09/17/03	100-NR-1 RAWD-wet-blast		SOLID							
09/18/03		B00-054								

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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SDG 7591
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2343

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B00-054	Gross Alpha in Soil	900.0_ALPHABETA_GPC	4			1	1	1		7
93B/93	B00-054	Gross Beta in Soil	900.0_ALPHABETA_GPC	4			1	1	1		7
AM	B00-054	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	4			1	1	1		7
GAM	B00-054	Gamma Scan	GAMMA_GS	4			1	1	1		7
H	B00-054	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
NI_L	B00-054	Nickel 63 in Soil	NI63_LSC	4			1	1	1		7
PU	B00-054	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1		7
SR	B00-054	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
U	B00-054	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1		7
TOTALS				36			9	9	9	1	64

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-006 **Method Blank**

METHOD BLANK

SDG	7591	Client/Case no	Hanford SDG H2343
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309099-06	Client sample id	Method Blank
Dept sample id	7591-006	Material/Matrix	SOLID
		SAF No	B00-054

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.327	1.3	2.8	10	U	93A
Gross Beta	12587-47-2	-0.956	3.6	6.2	15	U	93B
Tritium	10028-17-8	-0.036	0.16	0.28	400	U	H
Nickel 63	13981-37-8	-0.273	1.3	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.095	0.095	0.22	1.0	U	SR
Uranium 233/234	U-233/234	0	0.048	0.19	1.0	U	U
Uranium 235	15117-96-1	0	0.059	0.22	1.0	U	U
Uranium 238	U-238	0	0.048	0.19	1.0	U	U
Plutonium 238	13981-16-3	0.005	0.022	0.052	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.011	0.042	1.0	U	PU
Americium 241	14596-10-2	-0.050	0.050	0.19	1.0	U	AM
Potassium 40	13966-00-2	U		1.3		U	GAM
Cobalt 60	10198-40-0	U		0.049	0.050	U	GAM
Cesium 137	10045-97-3	U		0.045	0.10	U	GAM
Radium 226	13982-63-3	U		0.096		U	GAM
Radium 228	15262-20-1	U		0.21		U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.083	0.10	U	GAM
Thorium 228	14274-82-9	U		0.057		U	GAM
Thorium 232	TH-232	U		0.21		U	GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		5.1		U	GAM
Americium 241	14596-10-2	U		0.040		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Soil

QC-BLANK 45709

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-005 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7591 Client/Case no Hanford SDG H2343
Contact Melissa C. Mannion Contract No. 630

Lab sample id R309099-05 Client sample id Lab Control Sample
Dept sample id 7591-005 Material/Matrix SOLID
SAF No B00-054

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	201	14	3.8	10		93A	200	8.0	100	68-132	70-130
Gross Beta	191	10	5.7	15		93B	209	8.4	91	77-123	70-130
Tritium	12.1	0.41	0.27	400		H	12.8	0.51	95	84-116	80-120
Nickel 63	220	4.7	2.4	30		NI_L	228	9.1	96	84-116	80-120
Total Strontium	10.0	0.51	0.21	1.0		SR	10.4	0.42	96	83-117	80-120
Uranium 233/234	16.3	2.9	1.2	1.0		U	18.6	0.74	88	75-125	80-120
Uranium 235	13.1	2.4	0.39	1.0		U	15.1	0.60	87	75-125	80-120
Uranium 238	19.8	3.4	1.1	1.0		U	20.2	0.81	98	73-127	80-120
Plutonium 238	23.5	1.2	0.088	1.0		PU	24.2	0.97	97	88-112	80-120
Plutonium 239/240	25.9	1.3	0.069	1.0		PU	26.4	1.1	98	88-112	80-120
Americium 241	19.0	2.1	0.25	1.0		AM	19.0	0.76	100	81-119	80-120
Cobalt 60	1.22	0.071	0.040	0.050		GAM	1.28	0.051	95	76-124	80-120
Cesium 137	1.42	0.069	0.047	0.10		GAM	1.29	0.052	110	73-127	80-120

100-NR-1 TSD Sites R.A. Smpl.-Soil

QC-LCS 45708

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-007 J00Y93

DUPLICATE

SDG 7591 Client/Case no Hanford SDG H2343

Contact Melissa C. Mannion Contract No. 630

DUPLICATE	ORIGINAL	
Lab sample id R309099-07	Lab sample id R309099-03	Client sample id J00Y93
Dept sample id 7591-007	Dept sample id 7591-003	Location/Matrix 100-NR-1 RAWD-wet-blast SOLID
	Received 09/18/03	Collected/Weight 09/17/03 08:00 1028 g
% solids 95.7	% solids 95.7	Custody/SAF No B00-054-263 B00-054

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 PROT TOT LIMIT
Gross Alpha	6.04	4.0	3.9	10		93A	9.59	4.0	4.1		45	117
Gross Beta	17.9	4.2	5.4	15		93B	15.4	4.6	6.3		15	65
Tritium	-0.021	0.16	0.28	400	U	H	-0.030	0.16	0.27	U	-	
Nickel 63	0.144	1.4	2.4	30	U	NI_L	-0.137	1.4	2.3	U	-	
Total Strontium	-0.001	0.094	0.20	1.0	U	SR	-0.065	0.14	0.30	U	-	
Uranium 233/234	0.540	0.079	0.030	1.0		U	0.819	0.28	0.17		41	65
Uranium 235	0.033	0.027	0.025	1.0		U	0	0.054	0.20	U	200	549
Uranium 238	0.600	0.085	0.021	1.0		U	0.531	0.23	0.17		12	66
Plutonium 238	-0.008	0.016	0.061	1.0	U	PU	0.006	0.023	0.045	U	-	
Plutonium 239/240	0.008	0.032	0.061	1.0	U	PU	0	0.023	0.064	U	-	
Americium 241	0	0.061	0.23	1.0	U	AM	-0.051	0.051	0.19	U	-	
Potassium 40	10.1	0.75	0.37			GAM	9.33	0.79	0.47		8	36
Cobalt 60	U		0.035	0.050	U	GAM	U		0.047	U	-	
Cesium 137	U		0.036	0.10	U	GAM	U		0.040	U	-	
Radium 226	0.403	0.083	0.080			GAM	0.482	0.089	0.091		18	52
Radium 228	0.684	0.16	0.15			GAM	0.593	0.21	0.22		14	70
Europium 152	U		0.087	0.10	U	GAM	U		0.11	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.14	U	-	
Europium 155	U		0.092	0.10	U	GAM	U		0.099	U	-	
Thorium 228	0.574	0.045	0.045			GAM	0.504	0.048	0.049		13	37
Thorium 232	0.684	0.16	0.15			GAM	0.593	0.21	0.22		14	70
Uranium 235	U		0.13		U	GAM	U		0.15	U	-	
Uranium 238	U		4.3		U	GAM	U		5.6	U	-	
Americium 241	U		0.19		U	GAM	U		0.11	U	-	

100-NR-1 TSD Sites R.A. Smpl.-Soil

QC-DUP#3 45710

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-008

J00Y93

MATRIX SPIKE

SDG 7591 | Client/Case no Hanford | SDG H2343

Contact Melissa C. Mannion | Contract No. 630

MATRIX SPIKE	ORIGINAL	
Lab sample id R309099-08	Lab sample id R309099-03	Client sample id J00Y93
Dept sample id 7591-008	Dept sample id 7591-003	Location/Matrix 100-NR-1 RAWD-wet-blast SOLID
	Received 09/18/03	Collected/Weight 09/17/03 08:00 1028 g
% solids 95.7	% solids 95.7	Custody/SAF No B00-054-263 B00-054

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	43.8	0.72	0.26	400	X	H	48.6	1.9	-0.030	0.16	90	85-115	60-140

100-NR-1 TSD Sites R.A. Smpl.-Soil

QC-MS#3 45711

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-001 J00Y91

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG H2343
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309099-01	Client sample id	J00Y91
Dept sample id	7591-001	Location/Matrix	100-NR-1 RAWD-wet-blast SOLID
Received	09/18/03	Collected/Weight	09/17/03 07:40 808.2 g
% solids	93.9	Custody/SAF No	B00-054-263 B00-054

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	6.47	3.1	2.6	10		93A
Gross Beta	12587-47-2	13.2	4.1	5.5	15		93B
Tritium	10028-17-8	-0.033	0.16	0.27	400	U	H
Nickel 63	13981-37-8	-0.339	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.057	0.10	0.20	1.0	U	SR
Uranium 233/234	U-233/234	0.559	0.20	0.15	1.0		U
Uranium 235	15117-96-1	0.047	0.047	0.18	1.0	U	U
Uranium 238	U-238	0.444	0.20	0.15	1.0		U
Plutonium 238	13981-16-3	0	0.061	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0.031	0.061	0.23	1.0	U	PU
Americium 241	14596-10-2	-0.026	0.051	0.20	1.0	U	AM
Potassium 40	13966-00-2	12.4	1.4	0.67			GAM
Cobalt 60	10198-40-0	U		0.089	0.050	U	GAM
Cesium 137	10045-97-3	0.156	0.068	0.076	0.10		GAM
Radium 226	13982-63-3	0.440	0.14	0.15			GAM
Radium 228	15262-20-1	0.650	0.32	0.33			GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.709	0.077	0.075			GAM
Thorium 232	TH-232	0.650	0.32	0.33			GAM
Uranium 235	15117-96-1	U		0.24		U	GAM
Uranium 238	U-238	U		8.3		U	GAM
Americium 241	14596-10-2	U		0.18		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/09/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-002 J00Y92

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG H2343
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309099-02	Client sample id	J00Y92
Dept sample id	7591-002	Location/Matrix	100-NR-1 RAWD-wet-blast SOLID
Received	09/18/03	Collected/Weight	09/17/03 07:50 847.7 g
% solids	91.8	Custody/SAF No	B00-054-263 B00-054

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.14	3.1	2.6	10		93A
Gross Beta	12587-47-2	15.3	4.1	5.3	15		93B
Tritium	10028-17-8	-0.049	0.15	0.26	400	U	H
Nickel 63	13981-37-8	0.153	1.5	2.6	30	U	NI_L
Total Strontium	SR-RAD	0.071	0.16	0.30	1.0	U	SR
Uranium 233/234	U-233/234	0.669	0.24	0.15	1.0		U
Uranium 235	15117-96-1	0	0.046	0.18	1.0	U	U
Uranium 238	U-238	0.688	0.24	0.15	1.0		U
Plutonium 238	13981-16-3	0	0.062	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.062	0.24	1.0	U	PU
Americium 241	14596-10-2	0.028	0.056	0.21	1.0	U	AM
Potassium 40	13966-00-2	7.99	2.9	0.47			GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Cesium 137	10045-97-3	U		0.046	0.10	U	GAM
Radium 226	13982-63-3	0.512	0.14	0.096			GAM
Radium 228	15262-20-1	0.648	0.26	0.21			GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.098	0.10	U	GAM
Thorium 228	14274-82-9	0.885	0.12	0.095			GAM
Thorium 232	TH-232	0.648	0.26	0.21			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		6.1		U	GAM
Americium 241	14596-10-2	U		0.052		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-003 J00Y93

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG_H2343
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309099-03	Client sample id	J00Y93
Dept sample id	7591-003	Location/Matrix	100-NR-1 RAWD-wet-blast SOLID
Received	09/18/03	Collected/Weight	09/17/03 08:00 1028 g
% solids	95.7	Custody/SAF No	B00-054-263 B00-054

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	9.59	4.0	4.1	10		93A
Gross Beta	12587-47-2	15.4	4.6	6.3	15		93B
Tritium	10028-17-8	-0.030	0.16	0.27	400	U	H
Nickel 63	13981-37-8	-0.137	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	-0.065	0.14	0.30	1.0	U	SR
Uranium 233/234	U-233/234	0.819	0.28	0.17	1.0		U
Uranium 235	15117-96-1	0	0.054	0.20	1.0	U	U
Uranium 238	U-238	0.531	0.23	0.17	1.0		U
Plutonium 238	13981-16-3	0.006	0.023	0.045	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.023	0.064	1.0	U	PU
Americium 241	14596-10-2	-0.051	0.051	0.19	1.0	U	AM
Potassium 40	13966-00-2	9.33	0.79	0.47			GAM
Cobalt 60	10198-40-0	U		0.047	0.050	U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	0.482	0.089	0.091			GAM
Radium 228	15262-20-1	0.593	0.21	0.22			GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.099	0.10	U	GAM
Thorium 228	14274-82-9	0.504	0.048	0.049			GAM
Thorium 232	TH-232	0.593	0.21	0.22			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		5.6		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/09/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2343

7591-004 J00Y94

DATA SHEET

SDG 7591 Client/Case no Hanford SDG H2343
Contact Melissa C. Mannion Contract No. 630

Lab sample id R309099-04 Client sample id J00Y94
Dept sample id 7591-004 Location/Matrix 100-NR-1 RAWD-wet-blast SOLID
Received 09/18/03 Collected/Weight 09/17/03 08:10 1025 g
% solids 95.9 Custody/SAF No B00-054-263 B00-054

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.59	2.6	3.3	10		93A
Gross Beta	12587-47-2	12.4	4.1	5.7	15		93B
Tritium	10028-17-8	-0.023	0.15	0.26	400	U	H
Nickel 63	13981-37-8	-0.801	1.4	2.5	30	U	NI_L
Total Strontium	SR-RAD	-0.087	0.15	0.32	1.0	U	SR
Uranium 233/234	U-233/234	0.411	0.22	0.21	1.0		U
Uranium 235	15117-96-1	0.033	0.066	0.25	1.0	U	U
Uranium 238	U-238	0.630	0.28	0.21	1.0		U
Plutonium 238	13981-16-3	0.005	0.021	0.039	1.0	U	PU
Plutonium 239/240	PU-239/240	0.036	0.031	0.049	1.0	U	PU
Americium 241	14596-10-2	-0.024	0.048	0.18	1.0	U	AM
Potassium 40	13966-00-2	10.5	2.5	0.42			GAM
Cobalt 60	10198-40-0	U		0.043	0.050	U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	0.389	0.12	0.086			GAM
Radium 228	15262-20-1	0.583	0.21	0.17			GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.086	0.10	U	GAM
Thorium 228	14274-82-9	0.749	0.10	0.082			GAM
Thorium 232	TH-232	0.583	0.21	0.17			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		5.0		U	GAM
Americium 241	14596-10-2	U		0.045		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test AM Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241
Preparation batch 7078-128					
R309099-01			7591-001	J00Y91	U
R309099-02			7591-002	J00Y92	U
R309099-03			7591-003	J00Y93	U
R309099-04			7591-004	J00Y94	U
R309099-05			7591-005	LCS (QC ID=45708)	ok
R309099-06			7591-006	BLK (QC ID=45709)	U
R309099-07			7591-007	Duplicate (R309099-03)	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
100-NR-1 TSD Sites R.A. Smpl.-Soil					

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 7078-128			2σ prep error 5.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01			J00Y91	0.20	0.500			68		148			12	09/26/03	09/29	SS-055
R309099-02			J00Y92	0.21	0.500			62		148			12	09/26/03	09/29	SS-056
R309099-03			J00Y93	0.19	0.500			72		148			12	09/26/03	09/29	SS-057
R309099-04			J00Y94	0.18	0.500			76		146			12	09/26/03	09/29	SS-060
R309099-05			LCS (QC ID=45708)	0.25	0.500			55		147				09/26/03	09/29	SS-062
R309099-06			BLK (QC ID=45709)	0.19	0.500			72		147				09/26/03	09/29	SS-065
R309099-07			Duplicate (R309099-03) (QC ID=45710)	0.23	0.500			62		147			12	09/26/03	09/29	SS-066
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test AM Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2343

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.21	±	0.050
FOR 7 SAMPLES	YIELD	67	±	15

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test PU Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240	
Preparation batch 7078-128								
R309099-01			7591-001	J00Y91	U		U	
R309099-02			7591-002	J00Y92	U		U	
R309099-03			7591-003	J00Y93	U		U	
R309099-04			7591-004	J00Y94	U		U	
R309099-05			7591-005	LCS (QC ID=45708)	ok		ok	
R309099-06			7591-006	BLK (QC ID=45709)	U		U	
R309099-07			7591-007	Duplicate (R309099-03)	-	U	-	U
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Soil				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-128			2σ prep error 5.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01			J00Y91	0.23	0.500			59		148			13	09/30/03	09/30	SS-065
R309099-02			J00Y92	0.24	0.500			60		148			13	09/30/03	09/30	SS-066
R309099-03			J00Y93	0.064	0.500			48		915			13	09/30/03	09/30	SS-055
R309099-04			J00Y94	0.049	0.500			55		915			13	09/30/03	09/30	SS-056
R309099-05			LCS (QC ID=45708)	0.088	0.500			41		915				09/30/03	09/30	SS-057
R309099-06			BLK (QC ID=45709)	0.052	0.500			53		918				09/30/03	09/30	SS-060
R309099-07			Duplicate (R309099-03) (QC ID=45710)	0.061	0.500			35		918			13	09/30/03	09/30	SS-062
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

LAB METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2343

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.11 ± 0.17
FOR 7 SAMPLES	YIELD	50 ± 19

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test U Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7078-128											
R309099-01			7591-001	J00Y91	0.559	U	0.444	126	72	11	12
R309099-02			7591-002	J00Y92	0.669	U	0.688	97	49	0	7
R309099-03			7591-003	J00Y93	0.819	U	0.531	154	85	0	10
R309099-04			7591-004	J00Y94	0.411	U	0.630	65	45	5	11
R309099-05			7591-005	LCS (QC ID=45708)	ok	ok	ok				
R309099-06			7591-006	BLK (QC ID=45709)	U	U	U				
R309099-07			7591-007	Duplicate (R309099-03)	ok	ok	ok	90	18	6	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-NR-1 TSD Sites R.A. Smpl.-Soil								Averages 107		4	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-128			2σ prep error 5.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01			J00Y91	0.18	0.500			106		130			7	09/24/03	09/24	SS-060
R309099-02			J00Y92	0.18	0.500			103		130			7	09/24/03	09/24	SS-061
R309099-03			J00Y93	0.20	0.500			91		130			7	09/24/03	09/24	SS-062
R309099-04			J00Y94	0.25	0.500			86		130			7	09/24/03	09/24	SS-063
R309099-05			LCS (QC ID=45708)	1.2	0.500			49		130				09/24/03	09/24	SS-064
R309099-06			BLK (QC ID=45709)	0.22	0.500			100		105				09/24/03	09/24	SS-032
R309099-07			Duplicate (R309099-03) (QC ID=45710)	0.030	0.500			95		1028			7	09/24/03	09/24	SS-065
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

LAB METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2343

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 7 SAMPLES

MDA 0.32 ± 0.79
YIELD 90 ± 39

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test SR Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium	
Preparation batch 7078-128						
R309099-01			7591-001	J00Y91	U	
R309099-02			7591-002	J00Y92	U	
R309099-03			7591-003	J00Y93	U	
R309099-04			7591-004	J00Y94	U	
R309099-05			7591-005	LCS (QC ID=45708)	ok	
R309099-06			7591-006	BLK (QC ID=45709)	U	
R309099-07			7591-007	Duplicate (R309099-03)	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
100-NR-1 TSD Sites R.A. Smpl.-Soil						

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 7078-128			2σ prep error 10.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01			J00Y91	0.20	1.00			99		100			8	09/25/03	09/25	GRB-230
R309099-02			J00Y92	0.30	1.00			100		100			8	09/25/03	09/25	GRB-223
R309099-03			J00Y93	0.30	1.00			100		100			8	09/25/03	09/25	GRB-224
R309099-04			J00Y94	0.32	1.00			100		100			8	09/25/03	09/25	GRB-229
R309099-05			LCS (QC ID=45708)	0.21	1.00			97		100				09/25/03	09/25	GRB-223
R309099-06			BLK (QC ID=45709)	0.22	1.00			98		100				09/25/03	09/25	GRB-229
R309099-07			Duplicate (R309099-03) (QC ID=45710)	0.20	1.00			100		100			8	09/25/03	09/25	GRB-230
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	
	SRTOT_SEP_PRECIP_GPC	
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-381	Strontium in Solids, rev 1

AVERAGES ± 2 SD FOR 7 SAMPLES			
	MDA	0.25	± 0.11
	YIELD	99	± 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test 93A Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Preparation batch 7078-128					
R309099-01	93		7591-001	J00Y91	6.47
R309099-02	93		7591-002	J00Y92	6.14
R309099-03	93		7591-003	J00Y93	9.59
R309099-04	93		7591-004	J00Y94	3.59
R309099-05	93		7591-005	LCS (QC ID=45708)	ok
R309099-06	93		7591-006	BLK (QC ID=45709)	U
R309099-07	93		7591-007	Duplicate (R309099-03)	ok
Nominal values and limits from method				RDLs (pCi/g)	10
100-NR-1 TSD Sites R.A. Smpl.-Soil					

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 7078-128			2σ prep error 20.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01	93		J00Y91	2.6	0.100			37		100			7	09/24/03	09/24	GRB-111
R309099-02	93		J00Y92	2.6	0.100			35		100			7	09/24/03	09/24	GRB-112
R309099-03	93		J00Y93	4.1	0.100			38		100			7	09/24/03	09/24	GRB-113
R309099-04	93		J00Y94	3.3	0.100			42		100			7	09/24/03	09/24	GRB-114
R309099-05	93		LCS (QC ID=45708)	3.8	0.100			21		100				09/24/03	09/24	GRB-115
R309099-06	93		BLK (QC ID=45709)	2.8	0.100			21		100				09/24/03	09/26	GRB-112
R309099-07	93		Duplicate (R309099-03) (QC ID=45710)	3.9	0.100			38		62			7	09/24/03	09/24	GRB-106
Nominal values and limits from method				10	0.100			5-250		100			180			

PROCEDURES	REFERENCE	
	900.0_ALPHABETA_GPC	
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES			
	MDA	3.3	± 1.3
	RESIDUE	33	± 17

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test 93B Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
Preparation batch 7078-128					
R309099-01	93		7591-001	J00Y91	13.2
R309099-02	93		7591-002	J00Y92	15.3
R309099-03	93		7591-003	J00Y93	15.4
R309099-04	93		7591-004	J00Y94	12.4
R309099-05	93		7591-005	LCS (QC ID=45708)	ok
R309099-06	93		7591-006	BLK (QC ID=45709)	U
R309099-07	93		7591-007	Duplicate (R309099-03)	ok
Nominal values and limits from method				RDLs (pCi/g)	15
100-NR-1 TSD Sites R.A. Smpl.-Soil					

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 7078-128			2σ prep error 15.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01	93		J00Y91	5.5	0.100			37		100			9	09/24/03	09/26	GRB-101
R309099-02	93		J00Y92	5.3	0.100			35		100			9	09/24/03	09/26	GRB-102
R309099-03	93		J00Y93	6.3	0.100			38		100			9	09/24/03	09/26	GRB-105
R309099-04	93		J00Y94	5.7	0.100			42		100			9	09/24/03	09/26	GRB-109
R309099-05	93		LCS (QC ID=45708)	5.7	0.100			21		100				09/24/03	09/26	GRB-111
R309099-06	93		BLK (QC ID=45709)	6.2	0.100			21		100				09/24/03	09/26	GRB-112
R309099-07	93		Duplicate (R309099-03) (QC ID=45710)	5.4	0.100			38		100			9	09/24/03	09/26	GRB-102
Nominal values and limits from method				15	0.100			5-250		100			180			

PROCEDURES	REFERENCE	
	900.0_ALPHABETA_GPC	
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES			
	MDA	5.7	± 0.77
	RESIDUE	33	± 17

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test GAM Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 7078-128						
R309099-01			7591-001	J00Y91	U	0.156
R309099-02			7591-002	J00Y92	U	U
R309099-03			7591-003	J00Y93	U	U
R309099-04			7591-004	J00Y94	U	U
R309099-05			7591-005	LCS (QC ID=45708)	ok	ok
R309099-06			7591-006	BLK (QC ID=45709)	U	U
R309099-07			7591-007	Duplicate (R309099-03)	- U	- U
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Soil				RDLs (pCi/g)	0.050	0.10

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 7078-128			2σ prep error 15.0 % Reference Lab Notebook 7078 pg. 128													
R309099-01			J00Y91	0.56	183					261			19	09/26/03	10/06	JR,03,00
R309099-02			J00Y92	0.38	178					444			19	09/26/03	10/06	JR,07,00
R309099-03			J00Y93	0.35	222					443			19	09/26/03	10/06	JR,03,00
R309099-04			J00Y94	0.36	216					424			19	09/26/03	10/06	JR,07,00
R309099-05			LCS (QC ID=45708)	0.040	178					546				09/26/03	10/07	JR,05,00
R309099-06			BLK (QC ID=45709)	0.34	178					397				09/26/03	10/08	JR,07,00
R309099-07			Duplicate (R309099-03) (QC ID=45710)	0.31	222					427			20	09/26/03	10/07	JR,05,00
Nominal values and limits from method				0.050	178					100			180			

PROCEDURES

REFERENCE	GAMMA_GS	
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.33 ± 0.31
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test H Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7078-128						
R309099-01			7591-001	J00Y91	U	
R309099-02			7591-002	J00Y92	U	
R309099-03			7591-003	J00Y93	U	
R309099-04			7591-004	J00Y94	U	
R309099-05			7591-005	LCS (QC ID=45708)	ok	
R309099-06			7591-006	BLK (QC ID=45709)	U	
R309099-07			7591-007	Duplicate (R309099-03)	-	U
R309099-08			7591-008	Spike (R309099-03)	ok	X

Nominal values and limits from method RDLs (pCi/g) 400
100-NR-1 TSD Sites R.A. Smpl.-Soil

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 7078-128			2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 128													
R309099-01			J00Y91	0.27	20.9			32		120			9	09/25/03	09/26	LSC-005
R309099-02			J00Y92	0.26	20.8			33		120			9	09/25/03	09/26	LSC-005
R309099-03			J00Y93	0.27	20.7			33		120			9	09/25/03	09/26	LSC-005
R309099-04			J00Y94	0.26	20.6			33		120			9	09/25/03	09/26	LSC-005
R309099-05			LCS (QC ID=45708)	0.27	20.0			33		120				09/25/03	09/26	LSC-005
R309099-06			BLK (QC ID=45709)	0.28	20.0			33		120				09/25/03	09/26	LSC-005
R309099-07			Duplicate (R309099-03) (QC ID=45710)	0.28	20.7			32		120			9	09/25/03	09/26	LSC-005
R309099-08			Spike (R309099-03) (QC ID=45711)	0.26	21.0			33		120			10	09/25/03	09/27	LSC-005
Nominal values and limits from method				400	20.0					25			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

LAB METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2343

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-218	Tritium in Soil Samples by Azeotropic Distillation, rev 1

AVERAGES ± 2 SD	MDA	0.27	±	0.017
FOR 8 SAMPLES	YIELD	33	±	1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

Test NI_L Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2343

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7078-128						
R309099-01			7591-001	J00Y91	U	
R309099-02			7591-002	J00Y92	U	
R309099-03			7591-003	J00Y93	U	
R309099-04			7591-004	J00Y94	U	
R309099-05			7591-005	LCS (QC ID=45708)	ok	
R309099-06			7591-006	BLK (QC ID=45709)	U	
R309099-07			7591-007	Duplicate (R309099-03)	-	U
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Soil				RDLs (pCi/g)	30	

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 7078-128			2σ prep error 10.0 %	Reference Lab Notebook 7078 pg. 128												
R309099-01			J00Y91	2.3	0.500			87		100			10	09/26/03	09/27	LSC-004
R309099-02			J00Y92	2.6	0.500			82		100			10	09/26/03	09/27	LSC-004
R309099-03			J00Y93	2.3	0.500			89		100			10	09/26/03	09/27	LSC-004
R309099-04			J00Y94	2.5	0.500			83		100			10	09/26/03	09/27	LSC-004
R309099-05			LCS (QC ID=45708)	2.4	0.500			98		78				09/26/03	09/27	LSC-004
R309099-06			BLK (QC ID=45709)	2.1	0.500			97		100				09/26/03	09/27	LSC-004
R309099-07			Duplicate (R309099-03) (QC ID=45710)	2.4	0.500			85		100			10	09/26/03	09/27	LSC-004
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-280	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES			
	MDA	2.4	± 0.32
	YIELD	89	± 13

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/09/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2343

SDG 7591
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2343

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 Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/09/03

SDG 7591
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2343

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/09/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2343

SDG 7591
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2343

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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DATA SHEET

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

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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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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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.

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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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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.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-054-263	Page 1 of 1

Collector RB Kerkow	**Company Contact** RB Kerkow / J. Fancher	**Telephone No.** 509-372-2187	**Project Coordinator** KESSNER, JH	**Price Code** 8L	**Data Turnaround**
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Soil	**Sampling Location** H2343 (7591) 100-NR-1 RAWD "wet-blast" area **re-sample		**SAF No.** B00-054	**Air Quality** ☐	21 days
Ice Chest No. EEC-96-058	**Field Logbook No.** EL-1524-3	**COA** R1301N2600	**Method of Shipment** FED EX		
Shipped To TMA/~~RECRA~~ RR 9/17/03	**Offsite Property No.** A030370		**Bill of Lading/Air Bill No.** See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

< 2,000 pCi/gm

Special Handling and/or Storage

None

Preservation	None										
Type of Container	Marinelli										
No. of Container(s)	1										
Volume	500mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.						TETD				
Sample No.	Matrix *	Sample Date	Sample Time								
J00Y91	SOIL	9-17-03	0740	X					J00X21		WB-05
J00Y92	SOIL	9-17-03	0750	X					J00X22		WB-06
J00Y93	SOIL	9-17-03	0800	X					J00X23		WB-07
J00Y94	SOIL	9-17-03	0810	X					J00X24		WB-08

CHAIN OF POSSESSION	Sign/Print Names			
Relinquished By/Removed From	Date/Time 1040	Received By/Stored In	Date/Time	
RB KERKOW/RB Kerkow	9-17-03	+David St. John	9/17/03 1040	
Relinquished By/Removed From	Date/Time 1300	Received By/Stored In	Date/Time	
+David St. John EEC	9/17/03	FED EX		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	
FED EX			9-18-03 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	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	

SPECIAL INSTRUCTIONS

Lab COA: R1301N2F00

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Isotopic Plutonium; Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3; Isotopic Uranium; Gross Alpha; Gross Beta

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	

BHI-EE-011 (03/01/2002)

EBERLINE SERVICES

RICHMOND, CA LABORATORY
SAMPLE RECEIPT CHECKLIST

Client: BHI Date/Time received 9-18-03 1000

CoC No. B00-054-263

Container I.D. No. ERC-96-058 Requested TAT (Days) 21 P.O. Received Yes [ ] No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [✓]	
6.	Number of samples in shipping container: 4			
7.	Number of containers per sample: 1	(Or see CoC ____)		
8.	Samples are in correct container	Yes [ ]	No [✓]	
9.	Paperwork agrees with samples?	Yes [✓]	No [ ]	
10.	Samples have: Tape [✓]	Hazard labels [✓]	Rad labels [✓]	Appropriate sample labels [✓]
11.	Samples are: In good condition [✓]	Leaking [ ]	Broken Container [ ]	Missing [ ]
12.	Samples are: Preserved [ ]	Not preserved [ ]	pH ____	Preservative ____
13.	Describe any anomalies: H3 IN PLASTIC CONTAINER			
14.	Was P.M. notified of any anomalies?	Yes [✓]	No [ ]	Date 9-18-03
15.	Received by [signature]	Date: 9-18-03	Time: 1000	

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
Tray 91	240						
Tray 92	"						
Tray 93	"						
Tray 94	"						

Ion Chamber Ser. No. ____ Calibration date ____

Alpha Meter Ser. No. ____ Calibration date ____

Beta/Gamma Meter Ser. No. 100482 Calibration date 6-24-03