0067075

EBERLINE SERVICES

April 15, 2005

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352

APR 2005 RECEIVED

Reference: **P.O. #630**
Eberline Services R5-02-192-7251, SDG H3037

Dear Mr. Trent:

Enclosed is the data report for two solid samples designated under SAF No. F03-025 received at Eberline Services on February 18, 2005. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

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OCT 27 2005
EDMC

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
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00000001

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3046 was composed of two solid (soil) samples designated under SAF No. F03-025 with a Project Designation of: 200-LW-1/LW-2 Characterization-Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 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 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Thorium Analyses

Thorium-230 activity was observed in the QC blank sample at 0.418 $\pm$0.26 pCi/g. The observed activity was greater than the sample MDA of 0.25 pCi/g but less than the RDL of 1.0 pCi/g. No other problems were encountered during the course of the analyses.

2.9 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.10 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.11 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.12 Gamma Spectroscopy

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

4/15/5

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 H3037

SDG	7251
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H3037

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

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

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Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	04/08/05

SDG 7251
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3037

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 04/08/05

SDG 7251
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3037

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 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SAMPLE SUMMARY

SDG 7251
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3037

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B19423	216-Z-7; 12.5ft-15ft	SOLID		R502192-02	F03-025	F03-025-146	02/08/05 12:50
B1BX65	216-Z-7; 12.5ft-15ft	SOLID		R502192-01	F03-025	F03-025-174	02/08/05 12:50
Method Blank		SOLID		R502192-04	F03-025		
Lab Control Sample		SOLID		R502192-03	F03-025		
Duplicate (R502192-01)	216-Z-7; 12.5ft-15ft	SOLID		R502192-05	F03-025		02/08/05 12:50

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.05
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SDG 7251
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H3037

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3037

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
7251	F03-025-146	B19423	SOLID	94.2	327 g		02/18/05	10	R502192-02	7251-002
	F03-025-174	B1BX65	SOLID	93.4	63 g		02/18/05	10	R502192-01	7251-001
		Method Blank	SOLID						R502192-04	7251-004
		Lab Control Sample	SOLID						R502192-03	7251-003
		Duplicate (R502192-01)	SOLID	93.4	63 g		02/18/05	10	R502192-05	7251-005

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG 7251
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3037

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Solids	7113-200	5.0	1			1	1	1/1		
NP	SOLID	Neptunium in Solids	7113-200	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7113-200	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Solids	7113-200	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	7113-200	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7113-200	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Solids	7113-200	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7113-200	15.0	2			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Solids	7113-200	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Solids	7113-200	10.0	2			1	1	1/1		
H	SOLID	Tritium in Solids	7113-200	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Solids	7113-200	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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG 7251
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3037

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAP No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B19423			R502192-02	7251-002	C		03/27/05	03/29/05	MWT	Carbon 14 in Solids
216-Z-7; 12.5ft-15ft		SOLID	02/08/05	7251-002	GAM		03/31/05	04/07/05	MWT	Gamma Scan
F03-025-146	F03-025		02/18/05	7251-002	H		03/27/05	03/29/05	MWT	Tritium in Solids
				7251-002	NI_L		03/22/05	03/25/05	MWT	Nickel 63 in Solids
				7251-002	SR		03/29/05	04/01/05	MWT	Total Strontium in Solids
				7251-002	TC		03/25/05	03/28/05	MWT	Technetium 99 in Solids
				7251-002	TH		03/14/05	03/15/05	MWT	Thorium, Isotopic in Solids
B1BX65			R502192-01	7251-001	AM		04/02/05	04/04/05	MWT	Americium 241 in Solids
216-Z-7; 12.5ft-15ft		SOLID	02/08/05	7251-001	C		03/27/05	03/29/05	MWT	Carbon 14 in Solids
F03-025-174	F03-025		02/18/05	7251-001	GAM		03/31/05	04/07/05	MWT	Gamma Scan
				7251-001	H		03/27/05	03/29/05	MWT	Tritium in Solids
				7251-001	NI_L		03/22/05	03/25/05	MWT	Nickel 63 in Solids
				7251-001	NP		03/28/05	03/31/05	MWT	Neptunium in Solids
				7251-001	PU		04/05/05	04/06/05	MWT	Plutonium, Isotopic in Solids
				7251-001	SR		03/29/05	04/01/05	MWT	Total Strontium in Solids
				7251-001	TC		03/25/05	03/28/05	MWT	Technetium 99 in Solids
				7251-001	TH		03/14/05	03/15/05	MWT	Thorium, Isotopic in Solids
				7251-001	U		03/19/05	03/21/05	MWT	Uranium, Isotopic in Solids
				7251-001	U_T		03/15/05	04/08/05	MWT	Uranium, Total in Solids
Method Blank			R502192-04	7251-004	AM		04/02/05	04/04/05	MWT	Americium 241 in Solids
		SOLID		7251-004	C		03/27/05	03/29/05	MWT	Carbon 14 in Solids
	F03-025			7251-004	GAM		03/31/05	04/07/05	MWT	Gamma Scan
				7251-004	H		03/27/05	03/29/05	MWT	Tritium in Solids
				7251-004	NI_L		03/22/05	03/25/05	MWT	Nickel 63 in Solids
				7251-004	NP		03/28/05	03/31/05	MWT	Neptunium in Solids
				7251-004	PU		04/05/05	04/06/05	MWT	Plutonium, Isotopic in Solids
				7251-004	SR		03/29/05	04/01/05	MWT	Total Strontium in Solids
				7251-004	TC		03/25/05	03/28/05	MWT	Technetium 99 in Solids
				7251-004	TH		03/14/05	03/15/05	MWT	Thorium, Isotopic in Solids
				7251-004	U		03/19/05	03/21/05	MWT	Uranium, Isotopic in Solids
				7251-004	U_T		03/15/05	04/08/05	MWT	Uranium, Total in Solids

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG 7251
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H3037

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R502192-03	7251-003	AM		04/02/05	04/04/05	MWT	Americium 241 in Solids
		SOLID		7251-003	C		03/27/05	03/29/05	MWT	Carbon 14 in Solids
	F03-025			7251-003	GAM		04/07/05	04/07/05	MWT	Gamma Scan
				7251-003	H		03/27/05	03/29/05	MWT	Tritium in Solids
				7251-003	NI_L		03/22/05	03/25/05	MWT	Nickel 63 in Solids
				7251-003	NP		03/28/05	03/31/05	MWT	Neptunium in Solids
				7251-003	PU		04/05/05	04/06/05	MWT	Plutonium, Isotopic in Solids
				7251-003	SR		03/29/05	04/01/05	MWT	Total Strontium in Solids
				7251-003	TC		03/25/05	03/28/05	MWT	Technetium 99 in Solids
				7251-003	TH		03/14/05	03/15/05	MWT	Thorium, Isotopic in Solids
				7251-003	U		03/19/05	03/21/05	MWT	Uranium, Isotopic in Solids
				7251-003	U_T		03/15/05	04/08/05	MWT	Uranium, Total in Solids
Duplicate (R502192-01)			R502192-05	7251-005	AM		04/02/05	04/04/05	MWT	Americium 241 in Solids
216-Z-7; 12.5ft-15ft		SOLID	02/08/05	7251-005	C		03/27/05	03/29/05	MWT	Carbon 14 in Solids
	F03-025		02/18/05	7251-005	GAM		04/01/05	04/07/05	MWT	Gamma Scan
				7251-005	H		03/27/05	03/29/05	MWT	Tritium in Solids
				7251-005	NI_L		03/22/05	03/25/05	MWT	Nickel 63 in Solids
				7251-005	NP		03/28/05	03/31/05	MWT	Neptunium in Solids
				7251-005	PU		04/05/05	04/06/05	MWT	Plutonium, Isotopic in Solids
				7251-005	SR		03/29/05	04/01/05	MWT	Total Strontium in Solids
				7251-005	TC		03/25/05	03/28/05	MWT	Technetium 99 in Solids
				7251-005	TH		03/14/05	03/15/05	MWT	Thorium, Isotopic in Solids
				7251-005	U		03/19/05	03/21/05	MWT	Uranium, Isotopic in Solids
				7251-005	U_T		03/15/05	04/08/05	MWT	Uranium, Total in Solids

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG 7251
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H3037

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	F03-025	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
C	F03-025	Carbon 14 in Solids	C14_COX_LSC	2			1	1	1	5
GAM	F03-025	Gamma Scan	GAMMA_GS	2			1	1	1	5
H	F03-025	Tritium in Solids	TRITIUM_COX_LSC	2			1	1	1	5
NI_L	F03-025	Nickel 63 in Solids	NI63_LSC	2			1	1	1	5
NP	F03-025	Neptunium in Solids	NP237_LLE_PLATE_AEA	1			1	1	1	4
PU	F03-025	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	F03-025	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	F03-025	Technetium 99 in Solids	TC99_TR_SEP_LSC	2			1	1	1	5
TH	F03-025	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	2			1	1	1	5
U	F03-025	Uranium, Isotopic in Solids	UISO_PLATE_AEA	1			1	1	1	4
U_T	F03-025	Uranium, Total in Solids	UTOT_KPA	1			1	1	1	4
TOTALS				19			12	12	12	55

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-04 **Method Blank**

METHOD BLANK

SDG	7251	Client/Case no	Hanford SDG H3037
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R502192-04	Client sample id	Method Blank
Dept sample id	7251-004	Material/Matrix	SOLID
		SAF No	F03-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.68	4.4	7.7	400	U	H
Carbon 14	14762-75-5	1.89	3.8	6.4	50	U	C
Nickel 63	13981-37-8	-1.14	1.9	3.3	30	U	NI_L
Total Strontium	SR-RAD	-0.101	0.13	0.31	1.0	U	SR
Technetium 99	14133-76-7	0.008	0.22	0.53	15	U	TC
Thorium 228	14274-82-9	-0.032	0.065	0.25		U	TH
Thorium 230	14269-63-7	0.418	0.26	0.25	1.0		TH
Thorium 232	TH-232	0	0.064	0.25	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.007	0.004	0.008	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.069	0.26	1.0	U	U
Uranium 235	15117-96-1	0	0.083	0.32	1.0	U	U
Uranium 238	U-238	0	0.069	0.26	1.0	U	U
Neptunium 237	13994-20-2	0	0.11	0.17	1.0	U	NP
Plutonium 238	13981-16-3	-0.032	0.065	0.25	1.0	U	PU
Plutonium 239/240	PU-239/240	0.032	0.065	0.25	1.0	U	PU
Americium 241	14596-10-2	0.057	0.11	0.22	1.0	U	AM
Potassium 40	13966-00-2	U		27		U	GAM
Cobalt 60	10198-40-0	U		1.1	0.050	U	GAM
Antimony 125	14234-35-6	U		2.9		U	GAM
Cesium 134	13967-70-9	U		1.5		U	GAM
Cesium 137	10045-97-3	U		1.1	0.10	U	GAM
Radium 226	13982-63-3	U		2.3		U	GAM
Radium 228	15262-20-1	U		6.2		U	GAM
Europium 152	14683-23-9	U		3.2	0.10	U	GAM
Europium 154	15585-10-1	U		3.5	0.10	U	GAM
Europium 155	14391-16-3	U		2.8	0.10	U	GAM
Thorium 228	14274-82-9	U		1.8		U	GAM
Thorium 232	TH-232	U		6.2		U	GAM
Uranium 235	15117-96-1	U		4.8		U	GAM

200-LW-1/LW-2 Characterization-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-04 **Method Blank**

BLANK, cont.

SDG	7251	Client/Case no	Hanford	SDG H3037
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R502192-04	Client sample id	Method Blank	
Dept sample id	7251-004	Material/Matrix		SOLID
		SAF No	F03-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		140		U	GAM
Americium 241	14596-10-2	U		4.8		U	GAM

200-LW-1/LW-2 Characterization-Soil

QC-BLANK 52120

Lab id	EBRLNE
Protocol	Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7251 Client/Case no Hanford SDG H3037

Contact Melissa C. Mannion Contract No. 630

Lab sample id R502192-03 Client sample id Lab Control Sample

Dept sample id 7251-003 Material/Matrix SOLID

SAF No F03-025

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	1390	31	9.8	400		H	1460	58	95	84-116	80-120
Carbon 14	3210	65	15	50		C	3190	130	101	83-117	80-120
Nickel 63	257	8.2	4.2	30		NI_L	270	11	95	84-116	80-120
Total Strontium	11.3	0.64	0.27	1.0		SR	11.1	0.44	102	81-119	80-120
Technetium 99	118	2.8	0.59	15		TC	120	4.8	98	84-116	80-120
Thorium 230	44.2	3.7	0.32	1.0	B	TH	46.4	1.9	95	85-115	80-120
Total Uranium (ug/g)	34.0	3.9	0.080	1.0		U_T	36.2	1.4	94	79-121	80-120
Uranium 233/234	20.9	2.3	1.0	1.0		U	19.3	0.77	108	79-121	80-120
Uranium 235	16.5	2.0	0.25	1.0		U	15.7	0.63	105	78-122	80-120
Uranium 238	20.7	2.3	0.98	1.0		U	21.0	0.84	99	81-119	80-120
Neptunium 237	19.6	3.1	0.38	1.0		NP	21.8	0.87	90	77-123	80-120
Plutonium 238	25.7	2.3	0.17	1.0		PU	26.4	1.1	97	84-116	80-120
Plutonium 239/240	29.0	2.5	0.17	1.0		PU	29.0	1.2	100	84-116	80-120
Americium 241	25.3	2.6	0.24	1.0		AM	22.4	0.90	113	80-120	80-120
Cobalt 60	39.9	4.3	2.7	0.050		GAM	37.3	1.5	107	70-130	80-120
Cesium 137	40.8	3.9	2.8	0.10		GAM	38.1	1.5	107	71-129	80-120

200-LW-1/LW-2 Characterization-Soil

QC-LCS 52119

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-05 B1BX65

DUPLICATE

SDG	7251			Client/Case no	Hanford SDG H3037
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R502192-05	Lab sample id	R502192-01	Client sample id	B1BX65
Dept sample id	7251-005	Dept sample id	7251-001	Location/Matrix	216-Z-7; 12.5ft-15ft SOLID
		Received	02/18/05	Collected/Weight	02/08/05 12:50 63 g
% solids	93.4	% solids	93.4	Custody/SAF No	F03-025-174 F03-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	2.08	3.1	5.1	400	U	H	1.83	3.6	6.0	U	-		
Carbon 14	1.91	2.6	4.3	50	U	C	0.988	3.0	5.1	U	-		
Nickel 63	-1.13	1.9	3.3	30	U	NI_L	-0.668	2.0	3.4	U	-		
Total Strontium	0.008	0.14	0.30	1.0	U	SR	-0.085	0.13	0.29	U	-		
Technetium 99	0.093	0.19	0.60	15	U	TC	0.212	0.20	0.59	U	-		
Thorium 228	0.623	0.23	0.18			TH	0.926	0.33	0.21		39	79	
Thorium 230	0.690	0.28	0.28	1.0	B	TH	1.03	0.39	0.21	B	40	84	
Thorium 232	0.460	0.23	0.18	1.0		TH	0.734	0.28	0.21		46	92	
Total Uranium (ug/g)	1.32	0.15	0.008	1.0		U_T	1.31	0.15	0.008		1	31	
Uranium 233/234	0.506	0.29	0.28	1.0		U	0.506	0.26	0.24		0	116	
Uranium 235	0.044	0.088	0.33	1.0	U	U	0	0.077	0.29	U	-		
Uranium 238	0.831	0.37	0.28	1.0		U	0.696	0.32	0.24		18	97	
Neptunium 237	0	0.047	0.071	1.0	U	NP	0.059	0.078	0.059		200	463	
Plutonium 238	0	0.046	0.18	1.0	U	PU	0	0.089	0.34	U	-		
Plutonium 239/240	0.646	0.23	0.18	1.0		PU	1.20	0.46	0.34		60	84	
Americium 241	0	0.071	0.27	1.0	U	AM	-0.029	0.059	0.22	U	-		
Potassium 40	10.4	8.3	9.7			GAM	14.2	7.7	8.0		31	142	
Cobalt 60	U		0.98	0.050	U	GAM	U		0.86	U	-		
Antimony 125	U		2.0		U	GAM	U		1.6	U	-		
Cesium 134	U		1.0		U	GAM	U		1.0	U	-		
Cesium 137	U		0.90	0.10	U	GAM	U		0.76	U	-		
Radium 226	U		1.6		U	GAM	U		1.3	U	-		
Radium 228	U		4.3		U	GAM	U		3.0	U	-		
Europium 152	U		1.7	0.10	U	GAM	U		1.6	U	-		
Europium 154	U		2.8	0.10	U	GAM	U		2.6	U	-		
Europium 155	U		1.5	0.10	U	GAM	U		0.94	U	-		
Thorium 228	U		1.9		U	GAM	U		0.92	U	-		
Thorium 232	U		4.3		U	GAM	U		3.0	U	-		

200-LW-1/LW-2 Characterization-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-05 B1BX65

DUPLICATE, cont.

SDG	7251			Client/Case no	Hanford SDG H3037
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R502192-05	Lab sample id	R502192-01	Client sample id	B1BX65
Dept sample id	7251-005	Dept sample id	7251-001	Location/Matrix	216-Z-7; 12.5ft-15ft SOLID
		Received	02/18/05	Collected/Weight	02/08/05 12:50 63 g
% solids	93.4	% solids	93.4	Custody/SAF No	F03-025-174 F03-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Uranium 235	U		2.5		U	GAM	U		1.6	U	-		
Uranium 238	U		75		U	GAM	U		87	U	-		
Americium 241	U		1.9		U	GAM	U		0.52	U	-		

200-LW-1/LW-2 Characterization-Soil

QC-DUP#1 52121

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/08/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-02 **B19423**

DATA SHEET

SDG	7251	Client/Case no	Hanford	SDG H3037
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R502192-02	Client sample id	B19423	
Dept sample id	7251-002	Location/Matrix	216-Z-7; 12.5ft-15ft	SOLID
Received	02/18/05	Collected/Weight	02/08/05 12:50	327 g
% solids	94.2	Custody/SAF No	F03-025-146	F03-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.061	2.4	4.2	400	U	H
Carbon 14	14762-75-5	2.35	2.1	3.4	50	U	C
Nickel 63	13981-37-8	-1.62	1.9	3.4	30	U	NI_L
Total Strontium	SR-RAD	-0.013	0.14	0.30	1.0	U	SR
Technetium 99	14133-76-7	0.083	0.22	0.56	15	U	TC
Thorium 228	14274-82-9	1.16	0.39	0.21			TH
Thorium 230	14269-63-7	0.741	0.33	0.26	1.0	B	TH
Thorium 232	TH-232	0.549	0.28	0.21	1.0		TH
Potassium 40	13966-00-2	10.9	1.6	0.98			GAM
Cobalt 60	10198-40-0	U		0.071	0.050	U	GAM
Antimony 125	14234-35-6	U		0.19		U	GAM
Cesium 134	13967-70-9	U		0.12		U	GAM
Cesium 137	10045-97-3	U		0.093	0.10	U	GAM
Radium 226	13982-63-3	0.410	0.15	0.16			GAM
Radium 228	15262-20-1	0.580	0.31	0.33			GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.627	0.088	0.089			GAM
Thorium 232	TH-232	0.580	0.31	0.33			GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		9.2		U	GAM
Americium 241	14596-10-2	U		0.30		U	GAM

200-LW-1/LW-2 Characterization-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-01 **B1BX65**

DATA SHEET

SDG	7251	Client/Case no	Hanford	SDG H3037	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R502192-01	Client sample id	B1BX65		
Dept sample id	7251-001	Location/Matrix	216-Z-7; 12.5ft-15ft	SOLID	
Received	02/18/05	Collected/Weight	02/08/05 12:50	63 g	
% solids	93.4	Custody/SAF No	F03-025-174	F03-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	1.83	3.6	6.0	400	U	H
Carbon 14	14762-75-5	0.988	3.0	5.1	50	U	C
Nickel 63	13981-37-8	-0.668	2.0	3.4	30	U	NI_L
Total Strontium	SR-RAD	-0.085	0.13	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.212	0.20	0.59	15	U	TC
Thorium 228	14274-82-9	0.926	0.33	0.21			TH
Thorium 230	14269-63-7	1.03	0.39	0.21	1.0	B	TH
Thorium 232	TH-232	0.734	0.28	0.21	1.0		TH
Total Uranium (ug/g)	7440-61-1	1.31	0.15	0.008	1.0		U_T
Uranium 233/234	U-233/234	0.506	0.26	0.24	1.0		U
Uranium 235	15117-96-1	0	0.077	0.29	1.0	U	U
Uranium 238	U-238	0.696	0.32	0.24	1.0		U
Neptunium 237	13994-20-2	0.059	0.078	0.059	1.0		NP
Plutonium 238	13981-16-3	0	0.089	0.34	1.0	U	PU
Plutonium 239/240	PU-239/240	1.20	0.46	0.34	1.0		PU
Americium 241	14596-10-2	-0.029	0.059	0.22	1.0	U	AM
Potassium 40	13966-00-2	14.2	7.7	8.0			GAM
Cobalt 60	10198-40-0	U		0.86	0.050	U	GAM
Antimony 125	14234-35-6	U		1.6		U	GAM
Cesium 134	13967-70-9	U		1.0		U	GAM
Cesium 137	10045-97-3	U		0.76	0.10	U	GAM
Radium 226	13982-63-3	U		1.3		U	GAM
Radium 228	15262-20-1	U		3.0		U	GAM
Europium 152	14683-23-9	U		1.6	0.10	U	GAM
Europium 154	15585-10-1	U		2.6	0.10	U	GAM
Europium 155	14391-16-3	U		0.94	0.10	U	GAM
Thorium 228	14274-82-9	U		0.92		U	GAM
Thorium 232	TH-232	U		3.0		U	GAM

200-LW-1/LW-2 Characterization-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

R502192-01 **B1BX65**

DATA SHEET, cont

SDG	7251	Client/Case no	Hanford	SDG H3037
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R502192-01	Client sample id	B1BX65	
Dept sample id	7251-001	Location/Matrix	216-Z-7; 12.5ft-15ft	SOLID
Received	02/18/05	Collected/Weight	02/08/05 12:50	63 g
% solids	93.4	Custody/SAF No	F03-025-174	F03-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 235	15117-96-1	U		1.6		U	GAM
Uranium 238	U-238	U		87		U	GAM
Americium 241	14596-10-2	U		0.52		U	GAM

200-LW-1/LW-2 Characterization-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test AM	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7113-200						
B1BX65	R502192-01			7251-001	U	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 5.0 %				Reference Lab Notebook 7113 pg. 200											
B1BX65	R502192-01			0.22	0.500			70		124			53	04/02/05	04/02	SS-055
BLK (QC ID=52120)	R502192-04			0.22	0.500			76		125				04/02/05	04/02	SS-057
LCS (QC ID=52119)	R502192-03			0.24	0.500			68		124				04/02/05	04/02	SS-056
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.27	0.500			61		125			53	04/02/05	04/02	SS-058
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-061	Determination of Moisture Content in Solid Samples rev 3
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-008	Heavy Element Electroplating, rev 9
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.24	±	0.047
YIELD	69	±	12

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test NP	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

NEPTUNIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7113-200						
B1BX65	R502192-01			7251-001	0.059	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	ok	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 5.0 %				Reference Lab Notebook 7113 pg. 200											
B1BX65	R502192-01			0.059	0.500			62		211			48	03/25/05	03/28	SS-055
BLK (QC ID=52120)	R502192-04			0.17	0.500			23		212				03/25/05	03/28	SS-057
LCS (QC ID=52119)	R502192-03			0.38	0.500			18		110				03/25/05	03/28	SS-028
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.071	0.500			55		212			48	03/25/05	03/28	SS-057
Nominal values and limits from method				1.0	0.500			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES			
MDA	0.17	±	0.30
YIELD	40	±	44

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test PU	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240
Preparation batch 7113-200							
B1BX65	R502192-01			7251-001	U		1.20
BLK (QC ID=52119)	R502192-04			7251-004	U		U
LCS (QC ID=52119)	R502192-03			7251-003	ok		ok
Duplicate (R502192-01)	R502192-05			7251-005	-	U	ok
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	1.0		1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 5.0 %				Reference Lab Notebook 7113 pg. 200											
B1BX65	R502192-01			0.34	0.500			58		102			56	04/05/05	04/05	SS-042
BLK (QC ID=52119)	R502192-04			0.25	0.500			59		143				04/05/05	04/05	SS-034
LCS (QC ID=52119)	R502192-03			0.17	0.500			81		141				04/05/05	04/05	SS-028
Duplicate (R502192-01) (QC ID=52119)	R502192-05			0.18	0.500			82		146			56	04/05/05	04/05	SS-035
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	0.24	± 0.16
FOR 4 SAMPLES	YIELD	70	± 27

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test TH Matrix SOLID
SDG 7251
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3037

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7113-200					
B19423	R502192-02			7251-002	0.741
B1BX65	R502192-01			7251-001	1.03
BLK (QC ID=52120)	R502192-04			7251-004	0.418
LCS (QC ID=52119)	R502192-03			7251-003	ok
Duplicate (R502192-01)	R502192-05			7251-005	ok
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200 2σ prep error 5.0 % Reference Lab Notebook 7113 pg. 200																
B19423	R502192-02			0.26	0.250			77		247			34	03/12/05	03/14	SS-056
B1BX65	R502192-01			0.21	0.250			76		247			34	03/12/05	03/14	SS-055
BLK (QC ID=52120)	R502192-04			0.25	0.250			67		246				03/12/05	03/14	SS-059
LCS (QC ID=52119)	R502192-03			0.32	0.250			82		247				03/12/05	03/14	SS-058
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.28	0.250			89		246			34	03/12/05	03/14	SS-060
Nominal values and limits from method				1.0	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.26 ± 0.081
YIELD 78 ± 16

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test U	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7113-200											
B1BX65	R502192-01			7251-001	0.506	U	0.696	73	50	0	11
BLK (QC ID=52120)	R502192-04			7251-004	U	U	U				
Lab Control Sample	R502192-03			7251-003	ok	ok	ok				
Duplicate (R502192-01)	R502192-05			7251-005	ok	- U	ok	61	44	5	11
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-LW-1/LW-2 Characterization-Soil							Averages	67		3	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 5.0 %				Reference Lab Notebook 7113 pg. 200											
B1BX65	R502192-01			0.29	0.500			80		104			39	03/18/05	03/19	SS-059
BLK (QC ID=52120)	R502192-04			0.32	0.500			75		104				03/18/05	03/19	SS-061
Lab Control Sample	R502192-03			1.0	0.500			89		104				03/18/05	03/19	SS-060
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.33	0.500			71		104			39	03/18/05	03/19	SS-062
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	0.48	± 0.69
	YIELD	79	± 16

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test SR	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7113-200						
B19423	R502192-02			7251-002	U	
B1BX65	R502192-01			7251-001	U	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 200															
B19423	R502192-02			0.30	1.00			79		100			49	03/29/05	03/29	GRB-218
B1BX65	R502192-01			0.29	1.00			80		100			49	03/29/05	03/29	GRB-217
BLK (QC ID=52120)	R502192-04			0.31	1.00			74		100				03/29/05	03/29	GRB-220
LCS (QC ID=52119)	R502192-03			0.27	1.00			76		99				03/29/05	03/29	GRB-220
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.30	1.00			80		100			49	03/29/05	03/29	GRB-221
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	0.29	±	0.030
YIELD	78	±	5

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test TC Matrix SOLID	Client Hanford
SDG 7251	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H3037

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7113-200						
B19423	R502192-02			7251-002	U	
B1BX65	R502192-01			7251-001	U	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	15	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 200																
B19423	R502192-02			0.56	1.00			89		50			45	03/22/05	03/25	GRB-222
B1BX65	R502192-01			0.59	1.00			88		50			45	03/22/05	03/25	GRB-221
BLK (QC ID=52120)	R502192-04			0.53	1.00			94		50				03/22/05	03/25	GRB-224
LCS (QC ID=52119)	R502192-03			0.59	1.00			88		50				03/22/05	03/25	GRB-223
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.60	1.00			87		50			45	03/22/05	03/25	GRB-217
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 5 SAMPLES	MDA	0.57	± 0.058
	YIELD	89	± 6

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test GAM Matrix SOLID
SDG 7251
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3037

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7113-200								
B19423	R502192-02			7251-002	U		U	
B1BX65	R502192-01			7251-001	U		U	
BLK (QC ID=52120)	R502192-04			7251-004	U		U	
LCS (QC ID=52119)	R502192-03			7251-003	ok		ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	0.050		0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 15.0 % Reference Lab Notebook 7113 pg. 200															
B19423	R502192-02			0.75	206					105			51	03/05/05	03/31	JR,05,00
B1BX65	R502192-01			6.2	7.98					157			51	03/05/05	03/31	SP,07,00
BLK (QC ID=52120)	R502192-04			11	7.00					157				03/05/05	03/31	JR,05,00
LCS (QC ID=52119)	R502192-03			2.7	7.00					113				03/05/05	04/07	JR,05,00
Duplicate (R502192-01) (QC ID=52121)	R502192-05			6.6	7.98					105			52	03/05/05	04/01	SP,03,00
Nominal values and limits from method				0.050	7.00					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 7
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 5.4 ± 7.9
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test U T Matrix SOLID	Client Hanford
SDG 7251	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H3037

METHOD SUMMARY

URANIUM, TOTAL IN SOLIDS

KINETIC PHOSPHORIMETRY (KPA)

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7113-200					
B1BX65	R502192-01			7251-001	1.31
BLK (QC ID=52120)	R502192-04			7251-004	U
LCS (QC ID=52119)	R502192-03			7251-003	ok
Duplicate (R502192-01)	R502192-05			7251-005	ok
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (ug/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7113-200 2σ prep error 9.0 % Reference Lab Notebook 7113 pg. 200																
B1BX65	R502192-01			0.008	0.0500								35	03/09/05	03/15	KPA-001
BLK (QC ID=52120)	R502192-04			0.008	0.0500									03/09/05	03/15	KPA-001
LCS (QC ID=52119)	R502192-03			0.080	0.0500									03/09/05	03/15	KPA-001
Duplicate (R502192-01) (QC ID=52121)	R502192-05			0.008	0.0500								35	03/09/05	03/15	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-062	Sample Aliquoting, rev 2
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 8
	CP-929	Calibration of the Kinetic Phosphorimeter, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	0.026 ± 0.072
	YIELD	±

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test C	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7113-200						
B19423	R502192-02			7251-002	U	
B1BX65	R502192-01			7251-001	U	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	50	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 200																
B19423	R502192-02			3.4	0.376			100		50			47	03/26/05	03/27	LSC-004
B1BX65	R502192-01			5.1	0.262			100		50			47	03/26/05	03/27	LSC-004
BLK (QC ID=52120)	R502192-04			6.4	0.200			100		50				03/26/05	03/27	LSC-004
LCS (QC ID=52119)	R502192-03			15	0.200			100		10				03/26/05	03/27	LSC-004
Duplicate (R502192-01) (QC ID=52121)	R502192-05			4.3	0.306			100		50			47	03/26/05	03/27	LSC-004
Nominal values and limits from method				50	0.200					25			180			

PROCEDURES	REFERENCE	C14_COX_LSC
	CP-251	Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD FOR 5 SAMPLES	MDA	6.8	± 9.4
	YIELD	100	± 0

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test H	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H3037	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7113-200						
B19423	R502192-02			7251-002	U	
B1BX65	R502192-01			7251-001	U	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	400	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 10.0 %				Reference Lab Notebook 7113 pg. 200											
B19423	R502192-02			4.2	0.376			100		50			47	03/26/05	03/27	LSC-004
B1BX65	R502192-01			6.0	0.262			100		50			47	03/26/05	03/27	LSC-004
BLK (QC ID=52120)	R502192-04			7.7	0.200			100		50				03/26/05	03/27	LSC-004
LCS (QC ID=52119)	R502192-03			9.8	0.200			100		33				03/26/05	03/27	LSC-004
Duplicate (R502192-01) (QC ID=52121)	R502192-05			5.1	0.306			100		50			47	03/26/05	03/27	LSC-004
Nominal values and limits from method				400	0.200					25			180			

PROCEDURES	REFERENCE	TRITIUM_COX_LSC
	CP-251	Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD	MDA	6.6	± 4.5
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

Test NI_L Matrix SOLID
SDG 7251
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H3037

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7113-200						
B19423	R502192-02			7251-002	U	
B1BX65	R502192-01			7251-001	U	
BLK (QC ID=52120)	R502192-04			7251-004	U	
LCS (QC ID=52119)	R502192-03			7251-003	ok	
Duplicate (R502192-01)	R502192-05			7251-005	-	U
Nominal values and limits from method 200-LW-1/LW-2 Characterization-Soil				RDLs (pCi/g)	30	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 7113-200	2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 200															
B19423	R502192-02			3.4	0.500			87		50			42	03/22/05	03/22	LSC-004
B1BX65	R502192-01			3.4	0.500			87		50			42	03/22/05	03/22	LSC-004
BLK (QC ID=52120)	R502192-04			3.3	0.500			91		50				03/22/05	03/22	LSC-004
LCS (QC ID=52119)	R502192-03			4.2	0.500			94		27				03/22/05	03/22	LSC-004
Duplicate (R502192-01) (QC ID=52121)	R502192-05			3.3	0.500			91		50			42	03/22/05	03/22	LSC-004
Nominal values and limits from method				30	0.500			30-105		25			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-280	Nickel-63 Purification, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.5 ± 0.77
YIELD 90 ± 6

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG	7251
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H3037

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	04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG	7251
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H3037

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG 7251
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3037

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG	7251
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H3037

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).

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-RG
Version	3.06
Report date	04/08/05

SDG 7251
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3037

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

SDG 7251
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3037

DATA SHEET

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

SDG 7251
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3037

LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3037

SDG 7251
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3037

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

SDG 7251
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3037

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

SDG 7251
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3037

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

SDG 7251
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3037

MATRIX SPIKE

for the recovery.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/08/05

SDG	7251
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H3037

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
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Version	3.06
Report date	04/08/05

METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-025-174	PAGE 1 OF 1
COLLECTOR: Pope/Pfister/Tyra/Wiberg	COMPANY CONTACT: TRENT, STEVE	TELEPHONE NO.: 373-5689	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8N
SAMPLING LOCATION: 216-Z-7; 12.5ft-15ft C4183	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil H3037 (7251)		SAF NO.: F03-025	AIR QUALITY ☐
ICE CHEST NO.: GRP-04-019	FIELD LOGBOOK NO.:	COA: 119143ES10	METHOD OF SHIPMENT: Federal Express	DATA TURNAROUND: 45 Days / 45 Days
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: 24 PTR 14908		BILL OF LADING/AIR BILL NO.: 24 PTR 14908	

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: ~~N/A~~ MBO 2/17/05 Red tu to B19413

SPECIAL HANDLING AND/OR STORAGE: N/A

PRESERVATION	None													
TYPE OF CONTAINER	G/P													
NO. OF CONTAINER(S)	1													
VOLUME	60mL													
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS													

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1BX65	SOIL	2-8-05	1250	X

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Leonid Hughes	2-8-05	[illegible]	2-8-05 1600
[illegible]	2/17/05 0840	M.H. Bauchwitz / C.J. Bauchwitz	2/17/05 0840
M.H. Bauchwitz / M.H. Bauchwitz	2/17/05 0840	Fed Ex	
FED EX	2/18/05	AK	2/18/05 10:00

SPECIAL INSTRUCTIONS: (1)Nickel-63; Gamma Spec - Radium {Radium-226, Radium-228} Technetium-99; Isotopic Thorium {Thorium-232} Strontium-89,90 -- Total Sr; Tritium - H3; Carbon-14; Cesium-137, Cobalt-60, Europium-152, Europium-153, Europium-154, Antimony-125, Cesium-134, Isotopic Plutonium, Isotopic Uranium, Americium-241, Neptunium-237, Total Uranium.

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(03/03)

0000048

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-146	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Tyra/Wiberg	TRENT, STEVE	373-5689	TRENT, SJ	AIR QUALITY [ ]	45 Days / 45 Days
SAMPLING LOCATION: 216-Z-7; 12.5ft-15ft @ 4183	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil H3037 (7251)		SAF NO.: F03-025		
ICE CHEST NO.: GRP-04-019	FIELD LOGBOOK NO.: HNF-N-356 1	COA: 119143ES10	METHOD OF SHIPMENT: Federal Express		
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: 2u PTR 1490f		BILL OF LADING/AIR BILL NO.: 2u PTR 1490f		

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: Radioactive Tie to: B19413

PRESERVATION	Cool 4C	None										
TYPE OF CONTAINER	aG	aG										
NO. OF CONTAINER(S)	1	1										
VOLUME	250mL	250mL										
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS										

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19423	SOIL	2-8-05	1250		X								

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Kevin Hoglund	2-8-05 1400	MO-026 Fridge #3	2-8-05 1600
MO-026	2/17/05 0840	M.H. Dawson M.G. Dawson	2/17/05 0840
M.H. Dawson M.G. Dawson	2/17/05 0840	Fed Ex	
FED EX	2/18/05	AK	2/18/05 10:00

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS
(1)~~Chromium Hex - 7196; NO2/NO3 - 353.2; Sulfides - 9030; Oil & Grease - 413.1~~; (2)Nickel-63; Gamma Spec - Radium {Radium-226, Radium-228} Technetium-99; Isotopic Thorium {Thorium-232} Tritium - H3; Carbon-14; Strontium-89,90 -- Total Sr;

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

0000049

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client FLUOR HANFORD City RICHLAND State WA

Date/Time received 2/18/05 10:00 CoC No. F03-025-146, 147

Container I.D. No. GRP-04-019 Requested TAT (Days) 45 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: 2 Sample Matrix SOIL
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: _____
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by AK Date: 2/18/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. _____ Calibration date _____

LvLI

24 LIONVILLE LABORATORY INC.

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

MAR 2005
RECEIVED

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:

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

LvLI Batch #	0502L838
SDG #	H3037
SAF #	F03-025
Date Received	2-18-05
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

r:\group\pm\orlette\tnu-hanford\data\fc_ltrs.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H3037

DATE RECEIVED: 02/18/05 LVL LOT # :0502L838

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19423						
% SOLIDS	001	S	05L%S025	02/08/05	02/22/05	02/22/05
% SOLIDS	001 REP	S	05L%S025	02/08/05	02/22/05	02/22/05
CHROMIUM VI	001	S	05LVI015	02/08/05	02/22/05	02/22/05
CHROMIUM VI	001 REP	S	05LVI015	02/08/05	02/22/05	02/22/05
CHROMIUM VI	001 MS	S	05LVI015	02/08/05	02/22/05	02/22/05
CHROMIUM VI	001 MSD	S	05LVI015	02/08/05	02/22/05	02/22/05
NITRATE NITRITE	001	S	05LN3014	02/08/05	03/10/05	03/10/05
NITRATE NITRITE	001 REP	S	05LN3014	02/08/05	03/10/05	03/10/05
NITRATE NITRITE	001 MS	S	05LN3014	02/08/05	03/10/05	03/10/05
OIL & GREASE BY GRAV	001	S	05LOG009	02/08/05	02/25/05	02/28/05
OIL AND GREASE BY GR	001 REP	S	05LOG009	02/08/05	02/25/05	02/28/05
OIL AND GREASE BY GR	001 MS	S	05LOG009	02/08/05	02/25/05	02/28/05
SULFIDE	001	S	05LSD010	02/08/05	02/22/05	02/22/05
SULFIDE	001 REP	S	05LSD010	02/08/05	02/22/05	02/22/05
SULFIDE	001 MS	S	05LSD010	02/08/05	02/22/05	02/22/05

LAB QC:

CHROMIUM VI	MB1	S	05LVI015	N/A	02/22/05	02/22/05
CHROMIUM VI	MB1 BS	S	05LVI015	N/A	02/22/05	02/22/05
CHROMIUM VI	MB1 BSD	S	05LVI015	N/A	02/22/05	02/22/05
NITRATE NITRITE	MB1	W	05LN3014	N/A	03/10/05	03/10/05
NITRATE NITRITE	MB1 BS	W	05LN3014	N/A	03/10/05	03/10/05
OIL & GREASE BY GRAV	MB1	S	05LOG009	N/A	02/25/05	02/28/05
OIL AND GREASE BY GR	MB1 BS	S	05LOG009	N/A	02/25/05	02/28/05
SULFIDE	MB1	S	05LSD010	N/A	02/22/05	02/22/05
SULFIDE	MB1 BS	S	05LSD010	N/A	02/22/05	02/22/05
SULFIDE	MB1 BSD	S	05LSD010	N/A	02/22/05	02/22/05

RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-025 H3037
LVL#: 0502L838

W.O.#: 11343-606-001-9999-00
Date Received: 02-18-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Sulfide that was received past hold.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of Sulfide as noted on the Sample Receipt Checklist.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 75-125% control limits.

8. The replicate analyses for Percent Solids, Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 20% Relative Percent Difference (RPD) control limit.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/23/05
Date

njp\i02-838

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		✓ 9071A(mod.)	✓ 413.1 (mod.)
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod) / 9034	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Nitrate Nitrite **Method:** EPA 353.2 (mod.)

Other: **Method**

L-WI-034/B-01/01

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

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INORGANICS DATA SUMMARY REPORT 03/15/05

CLIENT: TNUHANFORD P03-025 H3037 LVL LOT #: 0502L838

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B19423	% Solids	94.3		%	0.01	1.0
		Chromium VI	0.21	u	MG/KG	0.21	1.0
		Nitrate Nitrite	2.0		MG/KG	0.21	1.0
		Oil & Grease Gravimetri	707	u	MG/KG	707	1.0
		Sulfide	39.4	u	MG/KG	39.4	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/15/05

CLIENT: TNUHANFORD F03-025 H3037 LVL LOT #: 0502L838
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LVI015-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
BLANK10	05LN3014-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	05LOG009-MB1	Oil & Grease Gravimetri	667	u	MG/KG	667	1.0
BLANK10	05LSD010-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0

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INORGANICS ACCURACY REPORT 03/15/05

CLIENT: TNUHANFORD F03-025 H3037 LVL LOT #: 0502L838

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B19423	Soluble Chromium VI	4.1	0.21u	4.2	95.0	1.0
		Insoluble Chromium VI	1270	0.21u	1170	108.4	100
		Nitrate Nitrite	7.5	2.0	5.2	106.8	1.0
		Oil & Grease Gravimetr	5370	707 u	7040	76.3	1.0
		Sulfide	327	1.0 u	388	85.4	1.0
BLANK10	05LVI015-MB1	Soluble Chromium VI	4.0	0.20u	4.0	98.8	1.0
		Insoluble Chromium VI	1140	0.20u	1110	102.7	100
BLANK10	05LN3014-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.0	1.0
BLANK10	05LOG009-MB1	Oil & Grease Gravimetr	5910	667 u	6640	89.0	1.0
BLANK10	05LSD010-MB1	Sulfide	302	40.0 u	368	82.2	1.0
		Sulfide MSD	318	40.0 u	368	86.6	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 03/15/05

CLIENT: TNUHANFORD F03-025 H3037 LVL LOT #: 0502L838

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	05LSD010-MB1	Sulfide	82.2	86.6	5.2

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/15/05

CLIENT: TNUHANFORD F03-025 H3037 LVL LOT #: 0502L838

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B19423	% Solids	94.3	94.8	0.54	1.0
		Chromium VI	0.21u	0.22	NC	1.0
		Nitrate Nitrite	2.0	2.0	3.4	1.0
		Oil & Grease Gravimetri	707 u	707 u	NC	1.0
		Sulfide	39.4 u	39.2 u	NC	1.0

Lionville Laboratory Use Only
05021838

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

See SRC

Client: [illegible]

Est. Final Proj. Sampling Date:

Project #: [illegible]

Project Contact/Phone #:

Lionville Laboratory Project Manager: [illegible]

QC: Spec Del: Std TAT: 30 Days

Date Rec'd: 2/18/05 Date Due: 3/20/05

Refrigerator #							A 4														01
#/Type Container	Liquid Solid						1AG														
Volume	Liquid Solid						250														
Preservatives																					
ANALYSES REQUESTED →		ORGANIC										INORG									
		VOA	BNA	Pest/ PCB	Herb		CRL INBND	ISFD IOCGR				Metal	CN								

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
											ICRL INBND	ISFD IOCGR									
001	B19423	✓	✓	S	2/18/05	1250					1	✓									

Special Instructions:

DATE/REVISIONS:

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

Relinquished by	Received by	Date	Time
FedEx	J Perry	2/18/05	0945

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"	ORIGINAL REWRITTEN		

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-146	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Tyra/Wiberg	TRENT, STEVE	373-5689	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
216-Z-7; 12.5ft-15ft @ 4183	200-LW-1/LW-2 Characterization - Soil		F03-025		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**COA**	**METHOD OF SHIPMENT**		
GRP-05-001	HNF-N-356 1	119143ES10	Federal Express		
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
~~Laboratory Services~~ Pecra	See PTR 14909		See PTR 14909		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS			
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegitation W=Water WI=Wipe X=Other	N/A	PRESERVATION	Cool 4C	None
		TYPE OF CONTAINER	aG	aG
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	250mL
	SPECIAL HANDLING AND/OR STORAGE ~~N/A~~ Radioactive TIC TO: B19413	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19423	SOIL	2-8-05	1250	X									

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
n Hughes	2-8-5/1600	MO 026 Fridge #3	2-8-5/1600
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
MO-026 Fridge #3	2/7/05 0853	M.A. Bauchum M.A. Bauchum	2/7/05 0853
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
M.A. Bauchum M.A. Bauchum	2/8/05 0853	Fed Ex	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FedEx	2/18/05 0945	J Henry	2/18/05 0945
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

(1)Chromium Hex - 7196; NO2/NO3 - 353.2; Sulfides - 9030; Oil & Grease - 413.1;
(2)~~Nickel 63; Gamma Spec - Radium (Radium-226, Radium-228) Technetium 99; Isotopic Thorium (Thorium-232) Tritium - H3; Carbon 14; Strontium 89,90 -- Total Sr;~~

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford

Date: 2/18/05

Purchase Order / Project# /
SAF# / SOW# / Release #:

LvLI Batch #: 05021838

Sample Custodian: JPerry

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEx		Airbill# 7928 4983 1883	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 3.3 °C		Cooler # GRB-05-008	
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	~~☑ Yes~~ MS 3-21-05	☑ No	Sulfide past hold	
13.	VOA, TOC, TOX free of headspace?	☑ Yes	☐ No	☐ N/A	
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	~~☑ Yes~~ MS 3-21-05	☑ No	See #12	
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B