EBERLINE SERVICES

0061920

January 21, 2004

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

JAN 2004
RECEIVED

Reference: **P.O. #630**
Eberline Services R3-12-174-7674, SDG H2475

Dear Mr. Trent:

Enclosed is the data report for four soil samples designated under SAF No. F03-020 received at Eberline Services on December 30 and 31, 2003. 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/

Enclosure: Data Package

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JUN 21 2004
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
www.eberlineservices.com

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2475 was composed of four soil samples designated under SAF No. F03-020 with a Project Designation of: 216-B-26 Characterization Sampling – Soil Sampling.

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 Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.8 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.9 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.10 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.11 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

1/23/4

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 H2475

SDG	7674
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2475

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

About this section	1
Sample Summaries	3
Prep Batch Summary	5
Work Summary	6
Method Blanks	9
Lab Control Samples	11
Duplicates	12
Matrix Spikes	14
Data Sheets	15
Method Summaries	20
Report Guides	34
End of Section	48

N.J. Vervilk
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	01/23/04

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2475

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R312174-01	B183L6	C3245 (12.5-15 ft)	SOLID		F03-020	F03-020-004	12/09/03 15:03
R312174-02	B183N1	C3245 (97.5-100 ft)	SOLID		F03-020	F03-020-019	12/17/03 12:19
R312174-03	B183N4	C3245 (147.5-150 ft)	SOLID		F03-020	F03-020-022	12/18/03 10:15
R312174-04	B183N6	C3245 (197.5-200 ft)	SOLID		F03-020	F03-020-024	12/22/03 09:30
R312174-05	Lab Control Sample		SOLID		F03-020		
R312174-06	Method Blank		SOLID		F03-020		
R312174-07	Duplicate (R312174-01)	C3245 (12.5-15 ft)	SOLID		F03-020		12/09/03 15:03
R312174-08	Duplicate (R312174-02)	C3245 (97.5-100 ft)	SOLID		F03-020		12/17/03 12:19
R312174-09	Spike (R312174-02)	C3245 (97.5-100 ft)	SOLID		F03-020		12/17/03 12:19

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2475

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
7674	F03-020-004	B183L6	SOLID	93.2	31.89 g		12/30/03	21	R312174-01	7674-001
	F03-020-019	B183N1	SOLID	94.9	310.0 g		12/31/03	14	R312174-02	7674-002
	F03-020-022	B183N4	SOLID	97.1	291.5 g		12/31/03	13	R312174-03	7674-003
	F03-020-024	B183N6	SOLID	97.2	280.2 g		12/31/03	9	R312174-04	7674-004
		Method Blank	SOLID						R312174-06	7674-006
		Lab Control Sample	SOLID						R312174-05	7674-005
		Duplicate (R312174-01)	SOLID	93.2	31.89 g		12/30/03	21	R312174-07	7674-007
		Duplicate (R312174-02)	SOLID	94.9	310.0 g		12/31/03	14	R312174-08	7674-008
		Spike (R312174-02)	SOLID	94.9	310.0 g		12/31/03	14	R312174-09	7674-009

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2475

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7084-014	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7084-014	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7084-014	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7084-014	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7084-014	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7084-014	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7084-014	15.0	4			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Soil	7084-014	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7084-014	10.0	4			1	1	1/1		
H	SOLID	Tritium in Soil	7084-014	10.0	4			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7084-014	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 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2475

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R312174-01	B183L6			7674-001	AM		01/12/04	01/21/04	MWT	Americium 241 in Soil
12/09/03	C3245 (12.5-15 ft)		SOLID	7674-001	C		01/10/04	01/21/04	MWT	Carbon 14 in Soil
12/30/03	F03-020-004	F03-020		7674-001	GAM		01/15/04	01/21/04	MWT	Gamma Scan
				7674-001	H		01/17/04	01/21/04	MWT	Tritium in Soil
				7674-001	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-001	PU		01/12/04	01/21/04	MWT	Plutonium, Isotopic in Solids
				7674-001	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-001	TC		01/12/04	01/21/04	MWT	Technetium 99 in Soil
				7674-001	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil
				7674-001	U		01/12/04	01/21/04	MWT	Uranium, Isotopic in Soil
				7674-001	U_T		01/16/04	01/21/04	MWT	Uranium, Total in Soil
R312174-02	B183N1			7674-002	C		01/11/04	01/21/04	MWT	Carbon 14 in Soil
12/17/03	C3245 (97.5-100 ft)		SOLID	7674-002	GAM		01/15/04	01/21/04	MWT	Gamma Scan
12/31/03	F03-020-019	F03-020		7674-002	H		01/17/04	01/21/04	MWT	Tritium in Soil
				7674-002	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-002	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-002	TC		01/12/04	01/21/04	MWT	Technetium 99 in Soil
				7674-002	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil
R312174-03	B183N4			7674-003	C		01/11/04	01/21/04	MWT	Carbon 14 in Soil
12/18/03	C3245 (147.5-150 ft)		SOLID	7674-003	GAM		01/15/04	01/21/04	MWT	Gamma Scan
12/31/03	F03-020-022	F03-020		7674-003	H		01/17/04	01/21/04	MWT	Tritium in Soil
				7674-003	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-003	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-003	TC		01/14/04	01/21/04	MWT	Technetium 99 in Soil
				7674-003	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil
R312174-04	B183N6			7674-004	C		01/11/04	01/21/04	MWT	Carbon 14 in Soil
12/22/03	C3245 (197.5-200 ft)		SOLID	7674-004	GAM		01/15/04	01/21/04	MWT	Gamma Scan
12/31/03	F03-020-024	F03-020		7674-004	H		01/17/04	01/21/04	MWT	Tritium in Soil
				7674-004	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-004	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-004	TC		01/12/04	01/21/04	MWT	Technetium 99 in Soil
				7674-004	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2475

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R312174-05	Lab Control Sample			7674-005	AM		01/12/04	01/21/04	MWT	Americium 241 in Soil
			SOLID	7674-005	C		01/11/04	01/21/04	MWT	Carbon 14 in Soil
		F03-020		7674-005	GAM		01/15/04	01/21/04	MWT	Gamma Scan
				7674-005	H		01/17/04	01/21/04	MWT	Tritium in Soil
				7674-005	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-005	PU		01/12/04	01/21/04	MWT	Plutonium, Isotopic in Solids
				7674-005	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-005	TC		01/12/04	01/21/04	MWT	Technetium 99 in Soil
				7674-005	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil
				7674-005	U		01/12/04	01/21/04	MWT	Uranium, Isotopic in Soil
				7674-005	U_T		01/16/04	01/21/04	MWT	Uranium, Total in Soil
R312174-06	Method Blank			7674-006	AM		01/12/04	01/21/04	MWT	Americium 241 in Soil
			SOLID	7674-006	C		01/10/04	01/21/04	MWT	Carbon 14 in Soil
		F03-020		7674-006	GAM		01/15/04	01/21/04	MWT	Gamma Scan
				7674-006	H		01/18/04	01/21/04	MWT	Tritium in Soil
				7674-006	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-006	PU		01/12/04	01/21/04	MWT	Plutonium, Isotopic in Solids
				7674-006	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-006	TC		01/13/04	01/21/04	MWT	Technetium 99 in Soil
				7674-006	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil
				7674-006	U		01/12/04	01/21/04	MWT	Uranium, Isotopic in Soil
				7674-006	U_T		01/16/04	01/21/04	MWT	Uranium, Total in Soil
R312174-07	Duplicate (R312174-01)			7674-007	AM		01/12/04	01/21/04	MWT	Americium 241 in Soil
12/09/03	C3245 (12.5-15 ft)		SOLID	7674-007	PU		01/12/04	01/21/04	MWT	Plutonium, Isotopic in Solids
12/30/03		F03-020		7674-007	U		01/12/04	01/21/04	MWT	Uranium, Isotopic in Soil
				7674-007	U_T		01/16/04	01/21/04	MWT	Uranium, Total in Soil
R312174-08	Duplicate (R312174-02)			7674-008	C		01/11/04	01/21/04	MWT	Carbon 14 in Soil
12/17/03	C3245 (97.5-100 ft)		SOLID	7674-008	GAM		01/15/04	01/21/04	MWT	Gamma Scan
12/31/03		F03-020		7674-008	H		01/17/04	01/21/04	MWT	Tritium in Soil
				7674-008	NI_L		01/15/04	01/21/04	MWT	Nickel 63 in Soil
				7674-008	SR		01/13/04	01/21/04	MWT	Total Strontium in Soil
				7674-008	TC		01/12/04	01/21/04	MWT	Technetium 99 in Soil
				7674-008	TH		01/12/04	01/21/04	MWT	Thorium, Isotopic in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2475

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R312174-09 12/17/03 12/31/03	Spike (R312174-02) C3245 (97.5-100 ft)	F03-020	SOLID	7674-009	H		01/17/04	01/21/04	MWT	Tritium in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	F03-020	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
C	F03-020	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1		7
GAM	F03-020	Gamma Scan	GAMMA_GS	4			1	1	1		7
H	F03-020	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
NI_L	F03-020	Nickel 63 in Soil	NI63_LSC	4			1	1	1		7
PU	F03-020	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
SR	F03-020	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
TC	F03-020	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1		7
TH	F03-020	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	4			1	1	1		7
U	F03-020	Uranium, Isotopic in Soil	UISO_PLATE_AEA	1			1	1	1		4
U_T	F03-020	Uranium, Total in Soil	UTOT_KPA	1			1	1	1		4
TOTALS				32			11	11	11	1	66

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-006 Method Blank

METHOD BLANK

SDG	7674	Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R312174-06	Client sample id	Method Blank
Dept sample id	7674-006	Material/Matrix	SOLID
		SAF No	F03-020

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.105	0.19	0.33	400	U	H
Carbon 14	14762-75-5	1.65	1.6	2.5	50	U	C
Nickel 63	13981-37-8	1.13	1.2	1.9	30	U	NI_L
Total Strontium	SR-RAD	0.017	0.15	0.31	1.0	U	SR
Technetium 99	14133-76-7	-0.075	0.15	0.56	15	U	TC
Thorium 228	14274-82-9	0.020	0.040	0.074		U	TH
Thorium 230	14269-63-7	-0.080	0.094	0.21	1.0	U	TH
Thorium 232	TH-232	-0.020	0.027	0.064	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.005	0.013	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.031	0.12	1.0	U	U
Uranium 235	15117-96-1	0	0.038	0.14	1.0	U	U
Uranium 238	U-238	0	0.031	0.12	1.0	U	U
Plutonium 238	13981-16-3	0.005	0.016	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.005	0.020	1.0	U	PU
Americium 241	14596-10-2	0.039	0.078	0.15	1.0	U	AM
Potassium 40	13966-00-2	U		2.3		U	GAM
Cobalt 60	10198-40-0	U		0.21	0.050	U	GAM
Antimony 125	14234-35-6	U		0.42		U	GAM
Tin 126	15832-50-5	U		0.19		U	GAM
Cesium 134	13967-70-9	U		0.24		U	GAM
Cesium 137	10045-97-3	U		0.21	0.10	U	GAM
Radium 226	13982-63-3	U		0.35	0.10	U	GAM
Radium 228	15262-20-1	U		0.80	0.20	U	GAM
Europium 152	14683-23-9	U		0.44	0.10	U	GAM
Europium 154	15585-10-1	U		0.55	0.10	U	GAM
Europium 155	14391-16-3	U		0.34	0.10	U	GAM
Thorium 228	14274-82-9	U		0.25		U	GAM
Thorium 232	TH-232	U		0.80		U	GAM
Uranium 235	15117-96-1	U		0.54		U	GAM

216-B-26 Characterization - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-006 Method Blank

BLANK, cont.

SDG	7674	Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R312174-06	Client sample id	Method Blank
Dept sample id	7674-006	Material/Matrix	SOLID
		SAF No	F03-020

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		24		U	GAM
Americium 241	14596-10-2	U		0.43		U	GAM

216-B-26 Characterization - Soil

QC-BLANK #46510

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-005 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7674
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2475
Contract No. 630

Lab sample id R312174-05
Dept sample id 7674-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No F03-020

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	11.8	0.44	0.33	400		H	11.7	0.47	101	83-117	80-120
Carbon 14	1530	31	8.0	50		C	1600	64	96	84-116	80-120
Nickel 63	215	4.1	1.8	30		NI_L	228	9.1	94	84-116	80-120
Total Strontium	10.6	0.57	0.24	1.0		SR	10.4	0.42	102	82-118	80-120
Technetium 99	108	2.6	0.59	15		TC	109	4.4	99	84-116	80-120
Thorium 230	41.8	1.7	0.19	1.0		TH	42.0	1.7	100	89-111	80-120
Total Uranium (ug/g)	35.0	4.0	0.13	1.0		U_T	33.0	1.3	106	76-124	80-120
Uranium 233/234	10.2	1.2	0.53	1.0		U	9.29	0.37	110	78-122	80-120
Uranium 235	8.24	1.0	0.14	1.0		U	7.55	0.30	109	78-122	80-120
Uranium 238	11.0	1.2	0.51	1.0		U	10.1	0.40	109	80-120	80-120
Plutonium 238	12.4	0.49	0.021	1.0		PU	12.1	0.48	102	89-111	80-120
Plutonium 239/240	13.4	0.52	0.016	1.0		PU	13.2	0.53	102	89-111	80-120
Americium 241	10.3	1.3	0.18	1.0		AM	9.51	0.38	108	77-123	80-120
Cobalt 60	31.7	1.4	0.69	0.050		GAM	29.1	1.2	109	74-126	80-120
Cesium 137	29.2	1.1	0.82	0.10		GAM	25.4	1.0	115	73-127	80-120

216-B-26 Characterization - Soil

QC-LCS #46509

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-007 B183L6

DUPLICATE

SDG	7674			Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R312174-07	Lab sample id	R312174-01	Client sample id	B183L6
Dept sample id	7674-007	Dept sample id	7674-001	Location/Matrix	C3245 (12.5-15 ft) SOLID
		Received	12/30/03	Collected/Weight	12/09/03 15:03 31.89 g
% solids	93.2	% solids	93.2	Custody/SAF No	F03-020-004 F03-020

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
Total Uranium (ug/g)	57.8	6.2	1.3	1.0		U_T	56.9	6.1	1.3		2	30
Uranium 233/234	0	60	230	1.0	U	U	31.7	63	240	U	-	
Uranium 235	0	73	280	1.0	U	U	0	77	290	U	-	
Uranium 238	60.3	60	230	1.0	U	U	31.7	63	240	U	-	
Plutonium 238	0	13	51	1.0	U	PU	7.81	16	37	U	-	
Plutonium 239/240	179	67	51	1.0		PU	195	55	30		9	70
Americium 241	38.3	77	290	1.0	U	AM	41.1	82	310	U	-	

216-B-26 Characterization - Soil

QC-DUP#1 46511

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-008 B183N1

DUPLICATE

SDG	7674			Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R312174-08	Lab sample id	R312174-02	Client sample id	B183N1
Dept sample id	7674-008	Dept sample id	7674-002	Location/Matrix	C3245 (97.5-100 ft) SOLID
		Received	12/31/03	Collected/Weight	12/17/03 12:19 310.0 g
% solids	94.9	% solids	94.9	Custody/SAF No	F03-020-019 F03-020

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
Tritium	43.5	0.79	0.33	400		H	42.9	0.77	0.32		1	22
Carbon 14	-0.296	1.9	3.1	50	U	C	0.599	1.6	2.7	U	-	
Nickel 63	0.040	1.2	2.0	30	U	NI_L	1.55	1.3	2.1	U	-	
Total Strontium	0.014	0.12	0.24	1.0	U	SR	0.124	0.14	0.26	U	-	
Technetium 99	97.5	2.5	0.58	15		TC	92.0	2.4	0.58		6	22
Thorium 228	0.630	0.13	0.070			TH	0.748	0.14	0.062		17	43
Thorium 230	0.390	0.14	0.20	1.0		TH	0.470	0.16	0.20		19	75
Thorium 232	0.623	0.13	0.060	1.0		TH	0.715	0.14	0.062		14	44
Potassium 40	16.0	5.8	0.83			GAM	22.2	2.5	1.5		32	59
Cobalt 60	U		0.21	0.050	U	GAM	U		0.19	U	-	
Antimony 125	U		0.17		U	GAM	U		0.26	U	-	
Tin 126	U		0.22		U	GAM	U		0.17	U	-	
Cesium 134	U		0.20		U	GAM	U		0.16	U	-	
Cesium 137	0.392	0.092	0.096	0.10		GAM	0.437	0.16	0.16		11	74
Radium 226	0.476	0.32	0.14	0.10		GAM	0.802	0.22	0.23		51	97
Radium 228	0.819	0.44	0.34	0.20		GAM	1.25	0.44	0.47		42	96
Europium 152	U		0.18	0.10	U	GAM	U		0.28	U	-	
Europium 154	U		0.25	0.10	U	GAM	U		0.43	U	-	
Europium 155	U		0.14	0.10	U	GAM	U		0.27	U	-	
Thorium 228	0.832	0.21	0.082			GAM	1.34	0.20	0.20		47	52
Thorium 232	0.819	0.44	0.34			GAM	1.25	0.44	0.47		42	96
Uranium 235	U		0.23		U	GAM	U		0.39	U	-	
Uranium 238	U		9.5		U	GAM	U		16	U	-	
Americium 241	U		0.068		U	GAM	U		0.30	U	-	

216-B-26 Characterization - Soil

QC-DUP#2 46512

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-009 B183N1

MATRIX SPIKE

SDG	7674			Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R312174-09	Lab sample id	R312174-02	Client sample id	B183N1
Dept sample id	7674-009	Dept sample id	7674-002	Location/Matrix	C3245 (97.5-100 ft) SOLID
		Received	12/31/03	Collected/Weight	12/17/03 12:19 310.0 g
% solids	94.9	% solids	94.9	Custody/SAF No	F03-020-019 F03-020

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	92.2	1.1	0.32	400	X	H	48.7	1.9	42.9	0.77	101	68-132	60-140

216-B-26 Characterization - Soil

QC-MS#2 46513

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-001 B183L6

DATA SHEET

SDG	7674	Client/Case no	Hanford	SDG H2475	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R312174-01	Client sample id	B183L6		
Dept sample id	7674-001	Location/Matrix	C3245 (12.5-15 ft)	SOLID	
Received	12/30/03	Collected/Weight	12/09/03 15:03	31.89 g	
% solids	93.2	Custody/SAF No	F03-020-004	F03-020	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.753	2.4	4.1	400	U	H
Carbon 14	14762-75-5	95.1	400	670	50	U	C
Nickel 63	13981-37-8	2110	1200	1900	30		NI_L
Total Strontium	SR-RAD	974000	9500	740	1.0		SR
Technetium 99	14133-76-7	2.46	1.4	4.4	15	U	TC
Thorium 228	14274-82-9	0	19	39		U	TH
Thorium 230	14269-63-7	-22.1	51	99	1.0	U	TH
Thorium 232	TH-232	-9.48	13	30	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	56.9	6.1	1.3	1.0		U_T
Uranium 233/234	U-233/234	31.7	63	240	1.0	U	U
Uranium 235	15117-96-1	0	77	290	1.0	U	U
Uranium 238	U-238	31.7	63	240	1.0	U	U
Plutonium 238	13981-16-3	7.81	16	37	1.0	U	PU
Plutonium 239/240	PU-239/240	195	55	30	1.0		PU
Americium 241	14596-10-2	41.1	82	310	1.0	U	AM
Potassium 40	13966-00-2	U		3300		U	GAM
Cobalt 60	10198-40-0	U		89	0.050	U	GAM
Antimony 125	14234-35-6	U		900		U	GAM
Tin 126	15832-50-5	U		370		U	GAM
Cesium 134	13967-70-9	U		100		U	GAM
Cesium 137	10045-97-3	529000	1300	320	0.10		GAM
Radium 226	13982-63-3	U		410	0.10	U	GAM
Radium 228	15262-20-1	U		470	0.20	U	GAM
Europium 152	14683-23-9	U		850	0.10	U	GAM
Europium 154	15585-10-1	U		280	0.10	U	GAM
Europium 155	14391-16-3	U		580	0.10	U	GAM
Thorium 228	14274-82-9	U		370		U	GAM
Thorium 232	TH-232	U		470		U	GAM

216-B-26 Characterization - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-001 B183L6

DATA SHEET, cont

SDG	7674	Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R312174-01	Client sample id	B183L6
Dept sample id	7674-001	Location/Matrix	C3245 (12.5-15 ft) SOLID
Received	12/30/03	Collected/Weight	12/09/03 15:03 31.89 g
% solids	93.2	Custody/SAF No	F03-020-004 F03-020

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 235	15117-96-1	U		740		U	GAM
Uranium 238	U-238	U		10000		U	GAM
Americium 241	14596-10-2	U		850		U	GAM

216-B-26 Characterization - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-002 B183N1

DATA SHEET

SDG	7674	Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R312174-02	Client sample id	B183N1
Dept sample id	7674-002	Location/Matrix	C3245 (97.5-100 ft) SOLID
Received	12/31/03	Collected/Weight	12/17/03 12:19 310.0 g
% solids	94.9	Custody/SAF No	F03-020-019 F03-020

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	42.9	0.77	0.32	400		H
Carbon 14	14762-75-5	0.599	1.6	2.7	50	U	C
Nickel 63	13981-37-8	1.55	1.3	2.1	30	U	NI_L
Total Strontium	SR-RAD	0.124	0.14	0.26	1.0	U	SR
Technetium 99	14133-76-7	92.0	2.4	0.58	15		TC
Thorium 228	14274-82-9	0.748	0.14	0.062			TH
Thorium 230	14269-63-7	0.470	0.16	0.20	1.0		TH
Thorium 232	TH-232	0.715	0.14	0.062	1.0		TH
Potassium 40	13966-00-2	22.2	2.5	1.5			GAM
Cobalt 60	10198-40-0	U		0.19	0.050	U	GAM
Antimony 125	14234-35-6	U		0.26		U	GAM
Tin 126	15832-50-5	U		0.17		U	GAM
Cesium 134	13967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	0.437	0.16	0.16	0.10		GAM
Radium 226	13982-63-3	0.802	0.22	0.23	0.10		GAM
Radium 228	15262-20-1	1.25	0.44	0.47	0.20		GAM
Europium 152	14683-23-9	U		0.28	0.10	U	GAM
Europium 154	15585-10-1	U		0.43	0.10	U	GAM
Europium 155	14391-16-3	U		0.27	0.10	U	GAM
Thorium 228	14274-82-9	1.34	0.20	0.20			GAM
Thorium 232	TH-232	1.25	0.44	0.47			GAM
Uranium 235	15117-96-1	U		0.39		U	GAM
Uranium 238	U-238	U		16		U	GAM
Americium 241	14596-10-2	U		0.30		U	GAM

216-B-26 Characterization - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-003 B183N4

DATA SHEET

SDG	7674	Client/Case no	Hanford SDG H2475
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R312174-03	Client sample id	B183N4
Dept sample id	7674-003	Location/Matrix	C3245 (147.5-150 ft) SOLID
Received	12/31/03	Collected/Weight	12/18/03 10:15 291.5 g
% solids	97.1	Custody/SAF No	F03-020-022 F03-020

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.317	0.19	0.30	400		H
Carbon 14	14762-75-5	0.066	1.4	2.4	50	U	C
Nickel 63	13981-37-8	1.25	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.002	0.11	0.24	1.0	U	SR
Technetium 99	14133-76-7	3.30	0.35	0.53	15		TC
Thorium 228	14274-82-9	0.555	0.12	0.064			TH
Thorium 230	14269-63-7	0.341	0.15	0.21	1.0		TH
Thorium 232	TH-232	0.682	0.14	0.051	1.0		TH
Potassium 40	13966-00-2	19.6	1.0	0.50			GAM
Cobalt 60	10198-40-0	U		0.056	0.050	U	GAM
Antimony 125	14234-35-6	U		0.10		U	GAM
Tin 126	15832-50-5	U		0.21		U	GAM
Cesium 134	13967-70-9	U		0.069		U	GAM
Cesium 137	10045-97-3	U		0.066	0.10	U	GAM
Radium 226	13982-63-3	0.500	0.086	0.089	0.10		GAM
Radium 228	15262-20-1	1.02	0.21	0.19	0.20		GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Thorium 228	14274-82-9	0.847	0.056	0.048			GAM
Thorium 232	TH-232	1.02	0.21	0.19			GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		5.9		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

216-B-26 Characterization - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

7674-004 B183N6

DATA SHEET

SDG	7674	Client/Case no	Hanford SDG_H2475
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R312174-04	Client sample id	B183N6
Dept sample id	7674-004	Location/Matrix	C3245 (197.5-200 ft) SOLID
Received	12/31/03	Collected/Weight	12/22/03 09:30 280.2 g
% solids	97.2	Custody/SAF No	F03-020-024 F03-020

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.068	0.18	0.31	400	U	H
Carbon 14	14762-75-5	-0.472	1.7	2.9	50	U	C
Nickel 63	13981-37-8	2.05	1.2	2.0	30		NI_L
Total Strontium	SR-RAD	-0.016	0.13	0.27	1.0	U	SR
Technetium 99	14133-76-7	-0.004	0.18	0.59	15	U	TC
Thorium 228	14274-82-9	0.523	0.13	0.069			TH
Thorium 230	14269-63-7	0.298	0.14	0.20	1.0		TH
Thorium 232	TH-232	0.473	0.11	0.060	1.0		TH
Potassium 40	13966-00-2	10.1	4.9	1.1			GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Antimony 125	14234-35-6	U		0.19		U	GAM
Tin 126	15832-50-5	U		0.091		U	GAM
Cesium 134	13967-70-9	U		0.22		U	GAM
Cesium 137	10045-97-3	0.165	0.078	0.089	0.10		GAM
Radium 226	13982-63-3	0.326	0.29	0.17	0.10		GAM
Radium 228	15262-20-1	U		0.68	0.20	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.729	0.20	0.15			GAM
Thorium 232	TH-232	U		0.68		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.076		U	GAM

216-B-26 Characterization - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test AM Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241	
Preparation batch 7084-014						
R312174-01			7674-001	B183L6	41.1	U
R312174-05			7674-005	LCS (QC ID=46509)	ok	
R312174-06			7674-006	BLK (QC ID=46510)	U	
R312174-07			7674-007	Duplicate (R312174-01)	-	U
Nominal values and limits from method 216-B-26 Characterization - Soil				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7084-014			2σ prep error 5.0 %		Reference Lab Notebook 7084 pg. 014											
R312174-01			B183L6	310	5.0E-4			64		103			34	01/12/04	01/12	SS-035
R312174-05			LCS (QC ID=46509)	0.18	1.00			55		103				01/12/04	01/12	SS-036
R312174-06			BLK (QC ID=46510)	0.15	1.00			66		104				01/12/04	01/12	SS-040
R312174-07			Duplicate (R312174-01) (QC ID=46511)	290	5.0E-4			66		104			34	01/12/04	01/12	SS-042
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-061	Determination of Moisture Content in Solid Samples rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 150 ± 350
YIELD 63 ± 11

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test PU Matrix SOLID	Client Hanford
SDG 7674	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H2475

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240
Preparation batch 7084-014							
R312174-01			7674-001	B183L6	7.81	U	195
R312174-05			7674-005	LCS (QC ID=46509)	ok		ok
R312174-06			7674-006	BLK (QC ID=46510)	U		U
R312174-07			7674-007	Duplicate (R312174-01)	-	U	ok
Nominal values and limits from method 216-B-26 Characterization - 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 7084-014			2σ prep error 5.0 %	Reference Lab Notebook 7084 pg. 014												
R312174-01			B183L6	37	5.0E-4			74		944			34	01/12/04	01/12	SS-035
R312174-05			LCS (QC ID=46509)	0.021	1.00			65		944				01/12/04	01/12	SS-036
R312174-06			BLK (QC ID=46510)	0.030	1.00			53		945				01/12/04	01/12	SS-040
R312174-07			Duplicate (R312174-01) (QC ID=46511)	51	5.0E-4			42		945			34	01/12/04	01/12	SS-042
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-061	Determination 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 FOR 4 SAMPLES				
	MDA	22	±	52
	YIELD	58	±	28

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test TH Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 7084-014					
R312174-01			7674-001	B183L6	U
R312174-02			7674-002	B183N1	0.470
R312174-03			7674-003	B183N4	0.341
R312174-04			7674-004	B183N6	0.298
R312174-05			7674-005	LCS (QC ID=46509)	ok
R312174-06			7674-006	BLK (QC ID=46510)	U
R312174-08			7674-008	Duplicate (R312174-02)	ok
Nominal values and limits from method 216-B-26 Characterization - Soil				RDLs (pCi/g)	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 7084-014			2σ prep error 5.0 %	Reference Lab Notebook 7084 pg. 014												
R312174-01			B183L6	99	5.0E-4			88		939			34	01/12/04	01/12	SS-056
R312174-02			B183N1	0.20	0.250			90		939			26	01/12/04	01/12	SS-057
R312174-03			B183N4	0.21	0.250			86		940			25	01/12/04	01/12	SS-058
R312174-04			B183N6	0.20	0.250			93		939			21	01/12/04	01/12	SS-059
R312174-05			LCS (QC ID=46509)	0.19	0.250			88		939				01/12/04	01/12	SS-060
R312174-06			BLK (QC ID=46510)	0.21	0.250			85		939				01/12/04	01/12	SS-061
R312174-08			Duplicate (R312174-02) (QC ID=46512)	0.20	0.250			89		940			26	01/12/04	01/12	SS-062
Nominal values and limits from method				1.0	0.250			20-105		150			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test TH Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2475

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-061	Determination of Moisture Content in Solid Samples rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	14	±	75
FOR 7 SAMPLES	YIELD	88	±	5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test U	Matrix SOLID
SDG 7674	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H2475	

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 7084-014														
R312174-01			7674-001	B183L6	31.7	U	U		31.7	U				
R312174-05			7674-005	LCS (QC ID=46509)	ok		ok		ok					
R312174-06			7674-006	BLK (QC ID=46510)	U		U		U					
R312174-07			7674-007	Duplicate (R312174-01)	-	U	-	U	-	U				
Nominal values and limits from method 216-B-26 Characterization - Soil				RDLs (pCi/g)	1.0		1.0		1.0		100		4	
											Averages			

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 7084-014			2σ prep error 5.0 %	Reference Lab Notebook 7084 pg. 014												
R312174-01			B183L6	290	5.0E-4			69		113			34	01/10/04	01/12	SS-028
R312174-05			LCS (QC ID=46509)	0.53	1.00			77		114				01/10/04	01/12	SS-031
R312174-06			BLK (QC ID=46510)	0.14	1.00			73		114				01/10/04	01/12	SS-032
R312174-07			Duplicate (R312174-01) (QC ID=46511)	280	5.0E-4			73		114			34	01/10/04	01/12	SS-033
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-061	Determination 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 4 SAMPLES	MDA 140	±	330
	YIELD 73	±	7

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test SR Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7084-014					
R312174-01			7674-001	B183L6	974000
R312174-02			7674-002	B183N1	U
R312174-03			7674-003	B183N4	U
R312174-04			7674-004	B183N6	U
R312174-05			7674-005	LCS (QC ID=46509)	ok
R312174-06			7674-006	BLK (QC ID=46510)	U
R312174-08			7674-008	Duplicate (R312174-02)	- U
Nominal values and limits from method 216-B-26 Characterization - Soil				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7084-014			2σ prep error 10.0 % Reference Lab Notebook 7084 pg. 014													
R312174-01			B183L6	740	5.0E-4			80		100			35	01/13/04	01/13	GRB-221
R312174-02			B183N1	0.26	1.00			99		100			27	01/13/04	01/13	GRB-229
R312174-03			B183N4	0.24	1.00			99		100			26	01/13/04	01/13	GRB-230
R312174-04			B183N6	0.27	1.00			98		100			22	01/13/04	01/13	GRB-231
R312174-05			LCS (QC ID=46509)	0.24	1.00			95		100				01/13/04	01/13	GRB-229
R312174-06			BLK (QC ID=46510)	0.31	1.00			76		100				01/13/04	01/13	GRB-224
R312174-08			Duplicate (R312174-02) (QC ID=46512)	0.24	1.00			100		100			27	01/13/04	01/13	GRB-217
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-061	Determination 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 110 ± 560
YIELD 92 ± 20

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test TC Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99
Preparation batch 7084-014					
R312174-01			7674-001	B183L6	U
R312174-02			7674-002	B183N1	92.0
R312174-03			7674-003	B183N4	3.30
R312174-04			7674-004	B183N6	U
R312174-05			7674-005	LCS (QC ID=46509)	ok
R312174-06			7674-006	BLK (QC ID=46510)	U
R312174-08			7674-008	Duplicate (R312174-02)	ok
Nominal values and limits from method 216-B-26 Characterization - Soil				RDLs (pCi/g)	15

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 7084-014			2σ prep error 10.0 % Reference Lab Notebook 7084 pg. 014													
R312174-01			B183L6	4.4	0.130			86		50			34	01/08/04	01/12	GRB-222
R312174-02			B183N1	0.58	1.01			89		50			26	01/08/04	01/12	GRB-223
R312174-03			B183N4	0.53	1.02			91		50			27	01/08/04	01/14	GRB-222
R312174-04			B183N6	0.59	1.01			88		50			21	01/08/04	01/12	GRB-232
R312174-05			LCS (QC ID=46509)	0.59	1.00			94		50				01/08/04	01/12	GRB-229
R312174-06			BLK (QC ID=46510)	0.56	1.00			93		50				01/08/04	01/13	GRB-217
R312174-08			Duplicate (R312174-02) (QC ID=46512)	0.58	1.01			88		50			26	01/08/04	01/12	GRB-217
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test TC	Matrix SOLID
SDG 7674	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H2475	

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 2
	CP-002	Q.C. Preparation, rev 4
	CP-003	Addition of Carriers and Tracers, rev 5
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	1.1	±	2.9
FOR 7 SAMPLES	YIELD	90	±	6

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test GAM Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 7084-014						
R312174-01			7674-001	B183L6	U	529000
R312174-02			7674-002	B183N1	U	0.437
R312174-03			7674-003	B183N4	U	U
R312174-04			7674-004	B183N6	U	0.165
R312174-05			7674-005	LCS (QC ID=46509)	ok	ok
R312174-06			7674-006	BLK (QC ID=46510)	U	U
R312174-08			7674-008	Duplicate (R312174-02)	- U	ok
Nominal values and limits from method 216-B-26 Characterization - 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 7084-014			2σ prep error 15.0 % Reference Lab Notebook 7084 pg. 014													
R312174-01			B183L6	2200	9.03					121			37	01/07/04	01/15	SP,02,03
R312174-02			B183N1	1.0	61.5					347			29	01/07/04	01/15	PD,03,00
R312174-03			B183N4	0.43	82.3					410			28	01/07/04	01/15	PD,04,00
R312174-04			B183N6	0.71	74.3					410			24	01/07/04	01/15	PD,07,00
R312174-05			LCS (QC ID=46509)	0.69	9.00					817				01/07/04	01/15	PD,03,00
R312174-06			BLK (QC ID=46510)	1.7	9.00					817				01/07/04	01/15	PD,04,00
R312174-08			Duplicate (R312174-02) (QC ID=46512)	0.61	61.5					817			29	01/07/04	01/15	PD,07,00
Nominal values and limits from method				0.050	9.00					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-061	Determination 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 320 ± 1700
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test U T Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Uranium
Preparation batch 7084-014					
R312174-01			7674-001	B183L6	56.9
R312174-05			7674-005	LCS (QC ID=46509)	ok
R312174-06			7674-006	BLK (QC ID=46510)	U
R312174-07			7674-007	Duplicate (R312174-01)	ok
Nominal values and limits from method 216-B-26 Characterization - Soil				RDLs (ug/g)	1.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-014			2σ prep error 9.0 %	Reference Lab Notebook 7084 pg. 014												
R312174-01			B183L6	1.3	5.0E-4								38	01/16/04	01/16	KPA-001
R312174-05			LCS (QC ID=46509)	0.13	0.0500									01/16/04	01/16	KPA-001
R312174-06			BLK (QC ID=46510)	0.013	0.0500									01/16/04	01/16	KPA-001
R312174-07			Duplicate (R312174-01) (QC ID=46511)	1.3	5.0E-4								38	01/16/04	01/16	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-061	Determination of Moisture Content in Solid Samples rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5
	CP-929	Calibration of the Kinetic Phosphorimeter, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.69 ± 1.4
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test C Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 7084-014						
R312174-01			7674-001	B183L6	95.1	U
R312174-02			7674-002	B183N1	U	
R312174-03			7674-003	B183N4	U	
R312174-04			7674-004	B183N6	U	
R312174-05			7674-005	LCS (QC ID=46509)	ok	
R312174-06			7674-006	BLK (QC ID=46510)	U	
R312174-08			7674-008	Duplicate (R312174-02)	-	U

Nominal values and limits from method 216-B-26 Characterization - Soil RDLs (pCi/g) 50

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 7084-014			2σ prep error 10.0 % Reference Lab Notebook 7084 pg. 014													
R312174-01			B183L6	670	0.0015			100		100			32	01/07/04	01/10	LSC-004
R312174-02			B183N1	2.7	0.362			100		100			25	01/07/04	01/11	LSC-004
R312174-03			B183N4	2.4	0.411			100		100			24	01/07/04	01/11	LSC-004
R312174-04			B183N6	2.9	0.338			100		100			20	01/07/04	01/11	LSC-004
R312174-05			LCS (QC ID=46509)	8.0	0.400			100		10				01/07/04	01/11	LSC-004
R312174-06			BLK (QC ID=46510)	2.5	0.400			100		100				01/07/04	01/10	LSC-004
R312174-08			Duplicate (R312174-02) (QC ID=46512)	3.1	0.320			100		100			25	01/07/04	01/11	LSC-004
Nominal values and limits from method				50	0.400					50			180			

PROCEDURES REFERENCE C14_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 5

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 99 ± 500
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test H Matrix SOLID
SDG 7674
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2475

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7084-014						
R312174-01			7674-001	B183L6	U	
R312174-02			7674-002	B183N1	42.9	
R312174-03			7674-003	B183N4	0.317	
R312174-04			7674-004	B183N6	U	
R312174-05			7674-005	LCS (QC ID=46509)	ok	
R312174-06			7674-006	BLK (QC ID=46510)	U	
R312174-08			7674-008	Duplicate (R312174-02)	ok	
R312174-09			7674-009	Spike (R312174-02)	ok	X

Nominal values and limits from method 216-B-26 Characterization - Soil RDLs (pCi/g) 400

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7084-014			2σ prep error 10.0 % Reference Lab Notebook 7084 pg. 014													
R312174-01			B183L6	4.1	1.58			33		120			39	01/16/04	01/17	LSC-005
R312174-02			B183N1	0.32	20.3			33		120			31	01/16/04	01/17	LSC-005
R312174-03			B183N4	0.30	21.9			33		120			30	01/16/04	01/17	LSC-005
R312174-04			B183N6	0.31	21.5			33		120			26	01/16/04	01/17	LSC-005
R312174-05			LCS (QC ID=46509)	0.33	20.0			33		120				01/16/04	01/17	LSC-005
R312174-06			BLK (QC ID=46510)	0.33	20.0			33		120				01/16/04	01/18	LSC-005
R312174-08			Duplicate (R312174-02) (QC ID=46512)	0.33	20.6			32		120			31	01/16/04	01/17	LSC-005
R312174-09			Spike (R312174-02) (QC ID=46513)	0.32	20.7			33		120			31	01/16/04	01/17	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 01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test H	Matrix SOLID
SDG 7674	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H2475	

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

AVERAGES ± 2 SD	MDA	0.79	±	2.7
FOR 8 SAMPLES	YIELD	33	±	1

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

Test NI L	Matrix SOLID
SDG 7674	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H2475	

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7084-014						
R312174-01			7674-001	B183L6	2110	
R312174-02			7674-002	B183N1	U	
R312174-03			7674-003	B183N4	U	
R312174-04			7674-004	B183N6	2.05	
R312174-05			7674-005	LCS (QC ID=46509)	ok	
R312174-06			7674-006	BLK (QC ID=46510)	U	
R312174-08			7674-008	Duplicate (R312174-02)	-	U
Nominal values and limits from method 216-B-26 Characterization - 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 7084-014			2σ prep error 10.0 % Reference Lab Notebook 7084 pg. 014													
R312174-01			B183L6	1900	5.0E-4			97		100			37	01/12/04	01/15	LSC-005
R312174-02			B183N1	2.1	0.500			88		100			29	01/12/04	01/15	LSC-005
R312174-03			B183N4	2.0	0.500			89		100			28	01/12/04	01/15	LSC-005
R312174-04			B183N6	2.0	0.500			92		100			24	01/12/04	01/15	LSC-005
R312174-05			LCS (QC ID=46509)	1.8	0.500			99		100				01/12/04	01/15	LSC-005
R312174-06			BLK (QC ID=46510)	1.9	0.500			99		100				01/12/04	01/15	LSC-005
R312174-08			Duplicate (R312174-02) (QC ID=46512)	2.0	0.500			93		100			29	01/12/04	01/15	LSC-005
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-061	Determination 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	MDA 270	±	1400
FOR 7 SAMPLES	YIELD 94	±	9

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	01/23/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2475

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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
Form DVD-RG
Version 3.06
Report date 01/23/04

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

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.

SDG 7674
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

DUPLICATE

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

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

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

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

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

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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 01/23/04

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.

SDG 7674
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2475

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
Form DVD-RG
Version 3.06
Report date 01/23/04

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.

* DT 12/29/03

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-004	Page 1 of 1
Collector Pope/Hughes/Pfister	Company Contact Steve Trent	Telephone No. 373-5869	Project Coordinator TRENT, SJ	Price Code 8ND* Data Turnaround *21 ~~45~~ Days
Project Designation 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location C3245 (12.5-15 ft) ~~#~~ H2475 (7674)		SAF No. F03-020	Air Quality ☐
Ice Chest No. 2/03-050023	Field Logbook No. HNF-N-	COA 119142ES10	Method of Shipment Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

SDG H2475

Special Handling and/or Storage (7674)

Preservation	None	None										
Type of Container	aG	aG										
No. of Container(s)	1	0										
Volume	60mL	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.										
Sample No. / Matrix * / Sample Date / Sample Time												
B183L6 / SOIL / 12/9/03 / 1503	X	X										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Site Ref	12/29/03 1300	Greg Thomas Greg Thomas	1300 12/29/03
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas Greg Thomas	1300 12/29/03	Fed Ex	~~12/29/03 1300~~
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX		DT 12/29/03 12-30-03	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

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Tin-126}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Total Uranium

(2) Isotopic Thorium {Thorium-232}; Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium {Radium-226, Radium-228}

Originating Chain Attached

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

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

A-6003-618(03/03)

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-004	Page 1 of 1
Collector Pope/Hughes/Pfister	Company Contact Steve Trent	Telephone No. 373-5869	Project Coordinator TRENT, SJ	Price Code 8N Air Quality ☐
Project Designation 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location C3245 ~~(12.5-15 ft)~~ 13'-15.5' 12/9/03 H2475 (7674)		SAF No. F03-020	Data Turnaround 45 Days
Ice Chest No.	Field Logbook No. HNF-N-356-1	COA 119142ES10	Method of Shipment Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

SDG H2475

Special Handling and/or Storage

(7674)

Preservation	Cool 4C	None										
Type of Container	G/P	G/P										
No. of Container(s)	1	1										
Volume	120mL	60mL										
SAMPLE ANALYSIS	Chromium Hex / 7196; NO2/NO3 - 353.2 12/9/03	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
B183L6	SOIL	12/9/03	1503		X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From JSPope/[illegible]	Date/Time 12/9/03 1730	Received By/Stored In Site Fridge	Date/Time 12/9/03 1730
Relinquished By/Removed From FedEx	Date/Time	Received By/Stored In [illegible]	Date/Time 12-30-03 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
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Isotopic Thorium {Thorium-232}; Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium {Radium-226, Radium-228}

* BOTTLE NOT RECEIVED

[illegible] 1230.03

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

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

A-6003-618(03/03)

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-019	Page 1 of 1
Collector Pope/Hughes/Pfister	Company Contact Steve Trent	Telephone No. 373-5869	Project Coordinator TRENT, SJ	Price Code ~~8N~~ 8D ① Data Turnaround ① ~~45 Days~~ 21 30 DAYS
Project Designation 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location C3245 (97.5-100 ft) H2475 (7674)		SAF No. F03-020	Air Quality ☐
Ice Chest No. GPP-03-027	Field Logbook No. HNF-N- 356-1	COA 119142ES20	Method of Shipment Federal Express	① MAB 12/30/03
Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No. See PTR		Bill of Lading/Air Bill No. See PTR	

POSSIBLE SAMPLE HAZARDS/REMARKS
TIE to RAD: B18530 (WSCF)

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	G	G/P									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	Chromium Hex - 7196; NO2/NO3 - 353.2 12/9/03	See item (1) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
B183N1	SOIL	12/17/03	1219		X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From JSPope/[signature]	Date/Time 12/17/03 1630	Received By/Stored In MO-026 / Fridge #2	Date/Time 12/17/03 1630
Relinquished By/Removed From MO-026 Fridge #2	Date/Time 0945 12/30/03	Received By/Stored In Greg Thomas [signature]	Date/Time 0945 12/30/03
Relinquished By/Removed From Greg Thomas [signature]	Date/Time 0945 12/30/03	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed ex	Date/Time	Received By/Stored In [signature]	Date/Time 1000 12/31/03
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) Isotopic Thorium {Thorium-232}; Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium {Radium-226, Radium-228}

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

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

A-6003-618(03/03)

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-020-022	Page 1 of 1
Collector: Pope/Hughes/Pfister	Company Contact: Steve Trent; Telephone No.: 373-5869	Project Coordinator: TRENT, SJ	Price Code: 8N 844 80 ① 1/2 (12/30) 1/2 (12/18/03) ① 45 Days 21 30 DAYS ① MAB 12/30/03
Project Designation: 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location: C3245 (147.5-150 ft) H2475 (7674)	SAF No.: F03-020	Air Quality ☐
Ice Chest No.: GPP-03-027	Field Logbook No.: HNF-N-350-1; COA: 119142ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: See PTR	Bill of Lading/Air Bill No.: See PTR	

POSSIBLE SAMPLE HAZARDS/REMARKS

RAD TIE TO (B18531) WSCF

Special Handling and/or Storage

Preservation	Cool 4C	None										
Type of Container	G	G/P										
No. of Container(s)	1	1										
Volume	250mL	250mL										
SAMPLE ANALYSIS	Chromium Hex - 7196; NO2/NO3 - 353.2	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
B183N4	SOIL	12/18/03	1015		X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: JS Popel	12/18/03 1430	Received By/Stored In: MO-026 Fridge #1	12/18/03 1430
Relinquished By/Removed From: MO-026 Fridge #1	12/30/03 0945	Received By/Stored In: Greg Thomas	12/30/03 0945
Relinquished By/Removed From: Greg Thomas	12/30/03 0945	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FED EX		Received By/Stored In:	1000 12-31-03
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Isotopic Thorium {Thorium-232}; Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium {Radium-226, Radium-228}

Matrix *

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

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

A-6003-618(03/03)

*BT 12/30/03

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-024	Page 1 of 1
Collector: Pope/Hughes/Pfister	Company Contact: Steve Trent	Telephone No.: 373-5869	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ 9N 12/17/03 *8H 8D; Data Turnaround: ~~45 Days~~ 9N 12/17/03 *21 30 DAYS
Project Designation: 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location: C3245 (197.5-200 ft) H2474 (7674)		SAF No.: F03-020	Air Quality: ☐
Ice Chest No.: GPP-03-027	Field Logbook No.: HNF-N- 356-1	COA: 119142ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: See PTR		Bill of Lading/Air Bill No.: See PTR	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD TIE to: B18532 (WSCF)

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	G	G/P									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	Chromium Hex - 7196; NO2/NO3 - 353.2 12/8/03	See item (1) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
B183N6	SOIL	12/22/03	0930		X								

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. PFISTER [signature]	12/22/3 1520	MO-026 FRIG 1	12/22/3 1520
Mo-026 Fridge #1	12/30/03 0945	Greg Thomas [signature]	12/30/03 0945
Greg Thomas [signature]	12/30/03 0945	Fed Ex	
FED EX		[signature]	1000 12-31-03

SPECIAL INSTRUCTIONS

(1) Isotopic Thorium {Thorium-232}; Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium {Radium-226, Radium-228}

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

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

A-6003-618(03/03)

EBERLINE SERVICES

RICHMOND, CA LABORATORY
SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 12-31-03

CoC No. F03-020-019,022,024

Container I.D. No. GRP-03-027 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: 3
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. Received by [signature] Date: 12-31-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
all samples	<40						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 106261 Calibration date 2-14-03

EBERLINE SERVICES

RICHMOND, CA LABORATORY
SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 12-30-03

CoC No. F03-020-004

Container I.D. No. LARGE WHITE TRUNK 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: 1
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: ONLY ONE BOTTLE RECEIVED, COC STATES 2 SENT
14. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 12-30-03
15. Received by [signature] Date: 12-30-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B18346	16,000	0.93					

Ion Chamber Ser. No. 4011 Calibration date 3-20-03

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 113722 Calibration date 2-14-03

LIONVILLE LABORATORY INC.

21 January 2004

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

JAN 2004
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 #	0312L461
SDG #	H2475
SAF #	F03-020
Date Received	12-31-04
# Samples	3
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

JAN 2004
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-020 H2475

DATE RECEIVED: 12/31/03 LVL LOT # :0312L461

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B183N4						
% SOLIDS	001	S	04L%S001	12/18/03	01/02/04	01/05/04
CHROMIUM VI	001	S	04LVI001	12/18/03	01/09/04	01/09/04
NITRATE NITRITE	001	S	04LN3001	12/18/03	01/08/04	01/08/04
NITRATE NITRITE	001 REP	S	04LN3001	12/18/03	01/08/04	01/08/04
NITRATE NITRITE	001 MS	S	04LN3001	12/18/03	01/08/04	01/08/04
TOTAL ORGANIC CARBON	001	S	04LTZ002	12/18/03	01/13/04	01/21/04
B183N6						
% SOLIDS	002	S	04L%S001	12/22/03	01/02/04	01/05/04
CHROMIUM VI	002	S	04LVI001	12/22/03	01/09/04	01/09/04
NITRATE NITRITE	002	S	04LN3001	12/22/03	01/08/04	01/08/04
TOTAL ORGANIC CARBON	002	S	04LTZ002	12/22/03	01/13/04	01/21/04
TOTAL ORGANIC CARBON	002 REP	S	04LTZ002	12/22/03	01/13/04	01/21/04
TOTAL ORGANIC CARBON	002 MS	S	04LTZ002	12/22/03	01/13/04	01/21/04
B183N1						
% SOLIDS	003	S	04L%S001	12/17/03	01/02/04	01/05/04
CHROMIUM VI	003	S	04LVI001	12/17/03	01/09/04	01/09/04
CHROMIUM VI	003 REP	S	04LVI001	12/17/03	01/09/04	01/09/04
CHROMIUM VI	003 MS	S	04LVI001	12/17/03	01/09/04	01/09/04
CHROMIUM VI	003 MSD	S	04LVI001	12/17/03	01/09/04	01/09/04
NITRATE NITRITE	003	S	04LN3001	12/17/03	01/08/04	01/08/04
TOTAL ORGANIC CARBON	003	S	04LTZ002	12/17/03	01/13/04	01/21/04

LAB QC:

CHROMIUM VI	MB1	S	04LVI001	N/A	01/09/04	01/09/04
CHROMIUM VI	MB1 BS	S	04LVI001	N/A	01/09/04	01/09/04
CHROMIUM VI	MB1 BSD	S	04LVI001	N/A	01/09/04	01/09/04
NITRATE NITRITE	MB1	W	04LN3001	N/A	01/08/04	01/08/04
NITRATE NITRITE	MB1 BS	W	04LN3001	N/A	01/08/04	01/08/04
TOTAL ORGANIC CARBON	MB1	W	04LTZ002	N/A	01/13/04	01/21/04
TOTAL ORGANIC CARBON	MB1 BS	W	04LTZ002	N/A	01/13/04	01/21/04

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-020 H2475
LVL#: 0312L461

W.O.#: 11343-606-001-9999-0
Date Received: 12-31-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

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

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite and Total Organic Carbon (TOC) were within the 75-125% control limits.

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

9. Results for Chromium VI and Nitrate Nitrite solid samples are reported on a dry weight basis and TOC samples are dried prior to analysis.

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

01-21-04
Date

njp\i12-461

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 13 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	
Carbon, Total Organic		✓ 9060(mod.)	✓ 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)	
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**

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.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/21/04

CLIENT: TNUHANFORD F03-020 H2475 LVL LOT #: 0312L461

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B183N4	% Solids	97.4	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Nitrate Nitrite	51.7	MG/KG	1.9	10.0
		Total Organic Carbon	112	MG/KG	21.4	1.0
-002	B183N6	% Solids	97.6	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
		Nitrate Nitrite	0.49	MG/KG	0.19	1.0
		Total Organic Carbon	160	MG/KG	14.8	1.0
-003	B183N1	% Solids	95.3	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Nitrate Nitrite	1080	MG/KG	36.5	200
		Total Organic Carbon	100	MG/KG	14.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/21/04

CLIENT: TNUHANFORD F03-020 H2475 LVL LOT #: 0312L461

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LVI001-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0
BLANK10	04LN3001-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	04LTZ002-MB1	Total Organic Carbon	4.7 u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/21/04

CLIENT: TNUHANFORD F03-020 H2475 LVL LOT #: 0312L461

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B183N4	Nitrate Nitrite	168	51.7	112	104.0	20.0
-002	B183N6	Total Organic Carbon	1770	160	1750	92.2	1.0
-003	B183N1	Soluble Chromium VI	4.0	0.21u	4.2	94.2	1.0
		Insoluble Chromium VI	1320	0.21u	1240	106.0	100
BLANK10	04LVI001-MB1	Soluble Chromium VI	3.9	0.20u	4.0	97.3	1.0
		Insoluble Chromium VI	1240	0.20u	1130	110.3	100
BLANK10	04LN3001-MB1	Nitrate Nitrite	5.5	0.20u	5.0	109.2	1.0
BLANK10	04LTZ002-MB1	Total Organic Carbon	389	4.7 u	400	97.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/21/04

CLIENT: TNUHANFORD F03-020 H2475 LVL LOT #: 0312L461

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B183N4	Nitrate Nitrite	51.7	51.3	0.70	10.0
-002REP	B183N6	Total Organic Carbon	160	136	16.6	1.0
-003REP	B183N1	Chromium VI	0.21u	0.21u	NC	1.0

Lionville Laboratory Use Only

03121461

Custody Transfer Record/Lab Work Request

Page 1 of ___

VLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-HANFORD SAF# F03-020

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del STD TAT 18 ~~21~~ days

Date Rec'd 12-31-03 Date Due 18 1-~~21~~-03

Refrigerator #											A 6					
#/Type Container	Liquid															
	Solid										16	-1				
Volume	Liquid															
	Solid										120	-1				
Preservatives																
ANALYSES REQUESTED →		ORGANIC VOA	BNA	Pest/PCB	Herb				INORG Metal	CN	Hg/Cr/Se/As/Ag					
Lionville Laboratory Use Only											ICR6	INB N2	LOCT			

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	ICR6	INB N2	LOCT
001	B183N4			S	12/15/03	1015	1	✓	✓
002	↓ N6				12/22/03	0930	1	✓	✓
003	↓ N1			↓	12/17/03	1219	1	✓	✓

Special Instructions: SAF # F03-020

Run Matrix QC

DATE/REVISIONS:

1-6-04 1. Add LOCT to batch

1-8-04 2. TAT = 18 days Due 1-18-04

3. per Client Request

4.

5.

6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/31/03	1015

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

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ___ °C

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-022	Page 1 of 1
Collector Pope/Hughes/Pfister	Company Contact Steve Trent	Telephone No. 373-5869	Project Coordinator TRENT, SJ	Price Code ~~8N~~ 8H ① 90-17/17/03 Data Turnaround ① ~~45~~ Days 90-17/17/03
Project Designation 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location C3245 (147.5-150 ft)		SAF No. F03-020	Air Quality ☐ 80 21 30 DAYS
Ice Chest No. GPP-03-028	Field Logbook No. HNF-N-356-1	COA 119142ES10	Method of Shipment Federal Express	① MAB 12/30/03
Shipped To RP 12-8-3 ~~EBERLINE SERVICES (Formerly TMA)~~ RECRA	Offsite Property No. See PTR		Bill of Lading/Air Bill No. See PTR	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None
Type of Container	G	G/P
No. of Container(s)	1	1
Volume	250mL	250mL
SAMPLE ANALYSIS	Chromium Hex - 7196; NO2/NO3 - 353.2	See item (1) in Special Instructions. RP 12-8-3

Sample No.	Matrix *	Sample Date	Sample Time										
B183N4	SOIL	12/18/03	1015	X									

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	12/18/03 1430	MO-026 / Fridge #1	12/18/03 1430
MO-026 Fridge #1	12/30/03 0945	Greg Thomas [signature]	12/30/03 0945
Greg Thomas [signature]	12/30/03 0945	Fed Ex	
Fed Ex	12-31-03 1015	[signature]	12-31-03 1015

SPECIAL INSTRUCTIONS

~~(1) Isotopic Thorium (Thorium-232); Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium (Radium-226; Radium-228)~~

RP 12-8-3

Matrix *

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

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

A-6003-618(03/03)

*XJ1 12/30/03

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-024	Page 1 of 1
Collector: Pope/Hughes/Pfister	Company Contact: Steve Trent	Telephone No.: 373-5869	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ AH 12/18/03 ~~8H~~ 8DX; Data Turnaround: AH 12/17/03 ~~45 Days~~ *21 ~~30~~ DAYS
Project Designation: 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location: C3245 (197.5-200 ft)		SAF No.: F03-020	Air Quality ☐
Ice Chest No.: GPP-03-028	Field Logbook No.: HNF-N- 356-1	COA: 119142ES10	Method of Shipment: Federal Express	
Shipped To: RJ 12-8-3 ~~EBERLINE SERVICES (Formerly TMA)~~ RECRA	Offsite Property No.: See PTR		Bill of Lading/Air Bill No.: See PTR	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None
Type of Container	G	G/P
No. of Container(s)	1	1
Volume	250mL	250mL
SAMPLE ANALYSIS	Chromium Hex - 7196; NO2/NO3 - 353.2	See item (1) in Special Instructions. RP 12-8-3

Sample No.	Matrix *	Sample Date	Sample Time										
B183N6	SOIL	12/22/03	0930	X									

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R PFISTER / [signature]	12-22-3 1520	MO-026 FRIG #1	12-22-3 1520
Mo-026 Fridge #1	12/30/03 0945	Greg Thomas [signature]	12/30/03 0945
Greg Thomas [signature]	12/30/03 0945	Fed Ex	
Fed Ex	12-31-03 1015	[signature]	12-31-03 1015

SPECIAL INSTRUCTIONS

(1) ~~Isotopic Thorium (Thorium-232); Strontium-89,90 -- Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium (Radium-226, Radium-228)~~ RP 12-8-3

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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

A-6003-618(03/03)

FLUOR Hanford Inc.	CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-019	Page 1 of 1
Collector: Pope/Hughes/Pfister	Company Contact: Steve Trent	Telephone No.: 373-5869	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ 8BD 9A 12/17/03 — Data Turnaround: ① ~~45 Days~~ 21-30 DAYS 9A 12/17/03
Project Designation: 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location: C3245 (97.5-100 ft)		SAF No.: F03-020	Air Quality ☐
Ice Chest No.: GPP-03-028	Field Logbook No.: HNF-N- 356-1	COA: 119142ES20	Method of Shipment: Federal Express	① MAB 12/30/03
Shipped To: RP 12-8-3 ~~EBERLINE SERVICES (Formerly TMA)~~ RECRA	Offsite Property No.: See PTR		Bill of Lading/Air Bill No.: See PTR	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None
Type of Container	G	G/P
No. of Container(s)	1	1
Volume	250mL	250mL
SAMPLE ANALYSIS	Chromium Hex - 7196; NO2/NO3 - 353.2	See item (1) in Special Instructions. RP 12-8-3

Sample No.	Matrix *	Sample Date	Sample Time										
B183N1	SOIL	12/17/03	1219	X									

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JSPOPE/GSPOP	12/17/03 1630	MO-026/ Fridge #2	12/17/03 1630
MO-026 Fridge #2	12/30/03 0945	Greg Thomas Greg Thomas	12/30/03 0945
Greg Thomas Greg Thomas	12/30/03 0945	Fed Ex	
Fed Ex	12-31-03 1015	[signature]	12-31-03 1015

SPECIAL INSTRUCTIONS

~~(1) Isotopic Thorium (Thorium-232); Strontium-89,90 - Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium - H3; Gamma Spec - Radium (Radium-226, Radium-228)~~

RP 12-8-3

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V=Vegetation
X=Other

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

A-6003-618(03/03)

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU- HANFord **Date:** 12-31-03

Purchase Order / Project# / SAF# / SOW# / Release #: F03-020

LvLI Batch # : 03L2L461 **Sample Custodian:** [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FED EX		Airbill# 7917 4406 6521	
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 1.9°	°C	Cooler # GPP-03-028	
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	☐ No		
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	☐ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B