0067182

EBERLINE SERVICES

September 1, 2005

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

Reference: **P.O. #630**
Eberline Services R5-06-205-7288, SDG H3228

Dear Mr. Trent:

Enclosed is the data report for four soil samples designated under SAF No. F05-023 received at Eberline Services on June 23, 2005. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/

Enclosure: Data Package

RECEIVED
OCT 27 2005
EDMC

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

00000001

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3228 was composed of four soil samples designated under SAF No. F05-023 with a Project Designation of: 216-A-8 Crib Characterization Borehole.

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 Analysis

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analysis

The Tc-99 samples were reanalyzed because of a LCS failure. No problems were encountered during the course of the reanalyses.

2.5 Iodine-129 Analysis

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 Neptunium-237 Analysis

No problems were encountered during the course of the analyses.

2.10 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.11 Neptunium-237 Analysis

No problems were encountered during the course of the analyses.

2.12 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Mel Mann

Melissa C. Mannion
Senior Program Manager

8/1/5

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H3228

SDG 7288	Client Hanford
Contact Melissa C. Mannion	Contract No. 630
	Case no SDG H3228

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	12
Duplicates	14
Data Sheets	17
Method Summaries	23
Report Guides	35
End of Section	49

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	08/31/05

SDG 7288
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3228

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 08/31/05

SDG 7288
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3228

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG 7288
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3228

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B1D7C9	216-A-8, I-3	SOLID		R506205-01	F05-023	F05-023-017	06/14/05 13:55
B1D7D0	216-A-8, I-3	SOLID		R506205-02	F05-023	F05-023-051	06/14/05 13:55
B1D9Y4	216-A-8, Rad Int 1	SOLID		R506205-03	F05-023	F05-023-046	06/08/05 09:20
B1D9Y5	216-A-8, Rad Int 2	SOLID		R506205-04	F05-023	F05-023-047	06/08/05 14:25
Method Blank		SOLID		R506205-06	F05-023		
Method Blank		SOLID		R506205-09	F05-023		
Lab Control Sample		SOLID		R506205-05	F05-023		
Lab Control Sample		SOLID		R506205-08	F05-023		
Duplicate (R506205-03)	216-A-8, Rad Int 1	SOLID		R506205-07	F05-023		06/08/05 09:20
Duplicate (R506205-03)	216-A-8, Rad Int 1	SOLID		R506205-10	F05-023		06/08/05 09:20

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SDG 7288
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H3228

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3228

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
7288	F05-023-017	B1D7C9	SOLID	97.2	155 g		06/23/05	9	R506205-01	7288-001
	F05-023-046	B1D9Y4	SOLID	94.5	100 g		06/23/05	15	R506205-03	7288-003
	F05-023-047	B1D9Y5	SOLID	94.4	70 g		06/23/05	15	R506205-04	7288-004
	F05-023-051	B1D7D0	SOLID	97.4	147 g		06/23/05	9	R506205-02	7288-002
		Method Blank	SOLID						R506205-06	7288-006
		Method Blank	SOLID						R506205-09	7288-009
		Lab Control Sample	SOLID						R506205-05	7288-005
		Lab Control Sample	SOLID						R506205-08	7288-008
		Duplicate (R506205-03)	SOLID	94.5	100 g		06/23/05	15	R506205-07	7288-007
		Duplicate (R506205-03)	SOLID	94.5	100 g		06/23/05	15	R506205-10	7288-010

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG 7288
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3228

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Solids	7132-197	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Solids	7132-197	5.0	3			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7132-197	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Solids	7132-197	5.0	3			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	7132-197	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7132-197	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Solids	7132-197	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7132-197A	15.0	4			1	1	1/1		
I	SOLID	Iodine 129 in Solids	7132-197	10.0	4			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Solids	7132-197	9.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Solids	7132-197	10.0	4			1	1	1/1		
H	SOLID	Tritium in Solids	7132-197	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 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG 7288
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3228

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B1D7C9			R506205-01	7288-001	C		07/29/05	08/08/05	MWT	Carbon 14 in Solids
216-A-8, I-3		SOLID	06/14/05	7288-001	GAM		07/13/05	07/25/05	CSS	Gamma Scan
F05-023-017	F05-023		06/23/05	7288-001	H		07/29/05	08/04/05	MWT	Tritium in Solids
				7288-001	I		08/14/05	08/18/05	MWT	Iodine 129 in Solids
				7288-001	TC	A1	08/27/05	08/30/05	MWT	Technetium 99 in Solids
B1D7D0			R506205-02	7288-002	C		07/29/05	08/08/05	MWT	Carbon 14 in Solids
216-A-8, I-3		SOLID	06/14/05	7288-002	GAM		07/13/05	07/25/05	CSS	Gamma Scan
F05-023-051	F05-023		06/23/05	7288-002	H		07/29/05	08/04/05	MWT	Tritium in Solids
				7288-002	I		08/14/05	08/18/05	MWT	Iodine 129 in Solids
				7288-002	NP		07/22/05	07/26/05	MWT	Neptunium in Solids
				7288-002	TC	A1	08/29/05	08/30/05	MWT	Technetium 99 in Solids
				7288-002	TH		07/23/05	07/25/05	MWT	Thorium, Isotopic in Solids
B1D9Y4			R506205-03	7288-003	AM		08/13/05	08/16/05	MWT	Americium 241 in Solids
216-A-8, Rad Int 1		SOLID	06/08/05	7288-003	C		07/29/05	08/08/05	MWT	Carbon 14 in Solids
F05-023-046	F05-023		06/23/05	7288-003	GAM		07/20/05	07/25/05	CSS	Gamma Scan
				7288-003	H		07/29/05	08/04/05	MWT	Tritium in Solids
				7288-003	I		08/14/05	08/18/05	MWT	Iodine 129 in Solids
				7288-003	NP		07/22/05	07/26/05	MWT	Neptunium in Solids
				7288-003	PU		08/02/05	08/04/05	MWT	Plutonium, Isotopic in Solids
				7288-003	SR		08/04/05	08/08/05	MWT	Total Strontium in Solids
				7288-003	TC	A1	08/27/05	08/30/05	MWT	Technetium 99 in Solids
				7288-003	TH		07/23/05	07/25/05	MWT	Thorium, Isotopic in Solids
				7288-003	U		07/30/05	08/01/05	MWT	Uranium, Isotopic in Solids
				7288-003	U_T		08/02/05	08/02/05	MWT	Uranium, Total in Solids
B1D9Y5			R506205-04	7288-004	AM		08/13/05	08/16/05	MWT	Americium 241 in Solids
216-A-8, Rad Int 2		SOLID	06/08/05	7288-004	C		07/29/05	08/08/05	MWT	Carbon 14 in Solids
F05-023-047	F05-023		06/23/05	7288-004	GAM		07/13/05	07/25/05	CSS	Gamma Scan
				7288-004	H		07/29/05	08/04/05	MWT	Tritium in Solids
				7288-004	I		08/15/05	08/18/05	MWT	Iodine 129 in Solids
				7288-004	NP		07/22/05	07/26/05	MWT	Neptunium in Solids
				7288-004	PU		08/02/05	08/04/05	MWT	Plutonium, Isotopic in Solids
				7288-004	SR		08/04/05	08/08/05	MWT	Total Strontium in Solids
				7288-004	TC	A1	08/29/05	08/30/05	MWT	Technetium 99 in Solids
				7288-004	TH		07/23/05	07/25/05	MWT	Thorium, Isotopic in Solids
				7288-004	U		07/30/05	08/01/05	MWT	Uranium, Isotopic in Solids
				7288-004	U_T		08/02/05	08/02/05	MWT	Uranium, Total in Solids

Lab id EBERLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG 7288
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H3228

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank			R506205-06	7288-006	AM		08/13/05	08/16/05	MWT	Americium 241 in Solids
		SOLID		7288-006	C		07/28/05	08/08/05	MWT	Carbon 14 in Solids
	F05-023			7288-006	GAM		07/14/05	07/25/05	CSS	Gamma Scan
				7288-006	H		07/29/05	08/04/05	MWT	Tritium in Solids
				7288-006	I		08/15/05	08/18/05	MWT	Iodine 129 in Solids
				7288-006	NP		07/22/05	07/26/05	MWT	Neptunium in Solids
				7288-006	PU		08/02/05	08/04/05	MWT	Plutonium, Isotopic in Solids
				7288-006	SR		08/04/05	08/08/05	MWT	Total Strontium in Solids
				7288-006	TH		07/23/05	07/25/05	MWT	Thorium, Isotopic in Solids
				7288-006	U		07/30/05	08/01/05	MWT	Uranium, Isotopic in Solids
				7288-006	U_T		08/02/05	08/02/05	MWT	Uranium, Total in Solids
Method Blank			R506205-09	7288-009	TC		08/27/05	08/30/05	MWT	Technetium 99 in Solids
		SOLID								
	F05-023									
Lab Control Sample			R506205-05	7288-005	AM		08/13/05	08/16/05	MWT	Americium 241 in Solids
		SOLID		7288-005	C		07/29/05	08/08/05	MWT	Carbon 14 in Solids
	F05-023			7288-005	GAM		07/19/05	07/25/05	CSS	Gamma Scan
				7288-005	H		07/30/05	08/04/05	MWT	Tritium in Solids
				7288-005	I		08/17/05	08/18/05	MWT	Iodine 129 in Solids
				7288-005	NP		07/22/05	07/26/05	MWT	Neptunium in Solids
				7288-005	PU		08/03/05	08/04/05	MWT	Plutonium, Isotopic in Solids
				7288-005	SR		08/04/05	08/08/05	MWT	Total Strontium in Solids
				7288-005	TH		07/23/05	07/25/05	MWT	Thorium, Isotopic in Solids
				7288-005	U		07/30/05	08/01/05	MWT	Uranium, Isotopic in Solids
				7288-005	U_T		08/02/05	08/02/05	MWT	Uranium, Total in Solids
Lab Control Sample			R506205-08	7288-008	TC		08/27/05	08/30/05	MWT	Technetium 99 in Solids
		SOLID								
	F05-023									

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG 7288
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H3228

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R506205-03)			R506205-07	7288-007	AM		08/13/05	08/16/05	MWT	Americium 241 in Solids
216-A-8, Rad Int 1		SOLID	06/08/05	7288-007	C		07/29/05	08/08/05	MWT	Carbon 14 in Solids
	F05-023		06/23/05	7288-007	GAM		07/19/05	07/25/05	CSS	Gamma Scan
				7288-007	H		07/29/05	08/04/05	MWT	Tritium in Solids
				7288-007	I		08/15/05	08/18/05	MWT	Iodine 129 in Solids
				7288-007	NP		07/22/05	07/26/05	MWT	Neptunium in Solids
				7288-007	PU		08/02/05	08/04/05	MWT	Plutonium, Isotopic in Solids
				7288-007	SR		08/04/05	08/08/05	MWT	Total Strontium in Solids
				7288-007	TH		07/23/05	07/25/05	MWT	Thorium, Isotopic in Solids
				7288-007	U		07/30/05	08/01/05	MWT	Uranium, Isotopic in Solids
				7288-007	U_T		08/02/05	08/02/05	MWT	Uranium, Total in Solids
Duplicate (R506205-03)			R506205-10	7288-010	TC		08/27/05	08/30/05	MWT	Technetium 99 in Solids
216-A-8, Rad Int 1		SOLID	06/08/05							
	F05-023		06/23/05							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	F05-023	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	2			1	1	1	5
C	F05-023	Carbon 14 in Solids	C14_COX_LSC	4			1	1	1	7
GAM	F05-023	Gamma Scan	GAMMA_GS	4			1	1	1	7
H	F05-023	Tritium in Solids	TRITIUM_COX_LSC	4			1	1	1	7
I	F05-023	Iodine 129 in Solids	I129_SEP_LEPS_GS	4			1	1	1	7
NP	F05-023	Neptunium in Solids	NP237_LLE_PLATE_AEA	3			1	1	1	6
PU	F05-023	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5
SR	F05-023	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	F05-023	Technetium 99 in Solids	TC99_TR_SEP_LSC	4			1	1	1	7
TH	F05-023	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	3			1	1	1	6
U	F05-023	Uranium, Isotopic in Solids	UISO_PLATE_AEA	2			1	1	1	5
U_T	F05-023	Uranium, Total in Solids	UTOT_KPA	2			1	1	1	5
TOTALS				36			12	12	12	72

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-06 **Method Blank**

METHOD BLANK

SDG 7288	Client/Case no Hanford	SDG H3228	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R506205-06	Client sample id Method Blank		
Dept sample id 7288-006	Material/Matrix	SOLID	
	SAF No F05-023		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.298	1.8	3.0	400	U	H
Carbon 14	14762-75-5	-0.518	1.8	3.2	50	U	C
Total Strontium	SR-RAD	-0.063	0.14	0.24	1.0	U	SR
Thorium 228	14274-82-9	0	0.065	0.25		U	TH
Thorium 230	14269-63-7	-0.065	0.13	0.25	1.0	U	TH
Thorium 232	TH-232	0	0.065	0.25	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.054	0.13	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.046	0.18	1.0	U	U
Uranium 235	15117-96-1	0	0.056	0.21	1.0	U	U
Uranium 238	U-238	0	0.046	0.18	1.0	U	U
Neptunium 237	13994-20-2	0.018	0.018	0.027	1.0	U	NP
Plutonium 238	13981-16-3	0.027	0.053	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.053	0.20	1.0	U	PU
Americium 241	14596-10-2	0.019	0.075	0.14	1.0	U	AM
Iodine 129	15046-84-1	0.536	0.62	1.4	2.0	U	I
Potassium 40	13966-00-2	U		3.0		U	GAM
Cobalt 60	10198-40-0	U		0.33	0.050	U	GAM
Antimony 125	14234-35-6	U		0.62		U	GAM
Cesium 134	13967-70-9	U		0.34		U	GAM
Cesium 137	10045-97-3	U		0.28	0.10	U	GAM
Radium 226	13982-63-3	U		0.51		U	GAM
Radium 228	15262-20-1	U		1.1		U	GAM
Europium 152	14683-23-9	U		0.70	0.10	U	GAM
Europium 154	15585-10-1	U		0.90	0.10	U	GAM
Europium 155	14391-16-3	U		0.38	0.10	U	GAM
Thorium 228	14274-82-9	U		0.31		U	GAM
Thorium 232	TH-232	U		1.1		U	GAM
Uranium 235	15117-96-1	U		0.71		U	GAM
Uranium 238	U-238	U		36		U	GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-06 **Method Blank**

BLANK, cont.

SDG 7288	Client/Case no Hanford	SDG H3228	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R506205-06	Client sample id Method Blank		
Dept sample id 7288-006	Material/Matrix	SOLID	
	SAF No F05-023		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.23		U	GAM

216A8 Crib Charactrization Borehole

QC-BLANK #53510

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-09 **Method Blank**

METHOD BLANK

SDG 7288	Client/Case no Hanford	SDG H3228	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R506205-09	Client sample id Method Blank		
Dept sample id 7288-009	Material/Matrix	SOLID	
	SAF No F05-023		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Technetium 99	14133-76-7	0.150	0.23	0.54	15	U	TC

216A8 Crib Charactrization Borehole

QC-BLANK 54124

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7288
Contact Melissa C. Mannion

Client/Case no Hanford SDG H3228
Contract No. 630

Lab sample id R506205-05
Dept sample id 7288-005

Client sample id Lab Control.Sample
Material/Matrix SOLID
SAF No F05-023

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	680	15	5.4	400		H	720	29	94	84-116	80-120
Carbon 14	1570	32	6.7	50		C	1600	64	98	84-116	80-120
Total Strontium	11.3	0.65	0.28	1.0		SR	11.0	0.44	103	81-119	80-120
Thorium 230	49.2	5.3	0.32	1.0		TH	46.4	1.9	106	80-120	80-120
Total Uranium (ug/g)	362	43	1.3	1.0		U_T	362	14	100	77-123	80-120
Uranium 233/234	20.3	2.2	0.93	1.0		U	19.3	0.77	105	80-120	80-120
Uranium 235	14.8	1.8	0.23	1.0		U	15.7	0.63	94	80-120	80-120
Uranium 238	20.5	2.2	0.90	1.0		U	21.0	0.84	98	82-118	80-120
Neptunium 237	20.9	1.0	0.056	1.0		NP	21.8	0.87	96	88-112	80-120
Plutonium 238	23.3	2.2	0.19	1.0		PU	26.4	1.1	88	85-115	80-120
Plutonium 239/240	26.4	2.5	0.19	1.0		PU	29.0	1.2	91	84-116	80-120
Americium 241	24.1	1.8	0.12	1.0		AM	22.4	0.90	108	84-116	80-120
Iodine 129	130	2.9	3.7	2.0		I	127	5.1	102	83-117	80-120
Cobalt 60	16.0	2.1	1.2	0.050		GAM	15.7	0.63	102	69-131	80-120
Cesium 137	15.3	1.4	1.1	0.10		GAM	13.8	0.55	111	70-130	80-120

216A8 Crib Charactrization Borehole

QC-LCS #53509

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7288

Contact Melissa C. Mannion

Client/Case no Hanford SDG H3228

Contract No. 630

Lab sample id R506205-08

Dept sample id 7288-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No F05-023

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
Technetium 99	110	2.9	0.66	15		TC	109	4.4	101	83-117	80-120

216A8 Crib Charactrization Borehole

QC-LCS 54123

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-07 B1D9Y4

DUPLICATE

SDG	7288			Client/Case no	Hanford SDG H3228
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R506205-07	Lab sample id	R506205-03	Client sample id	B1D9Y4
Dept sample id	7288-007	Dept sample id	7288-003	Location/Matrix	216-A-8, Rad Int 1 SOLID
		Received	06/23/05	Collected/Weight	06/08/05 09:20 100 g
% solids	94.5	% solids	94.5	Custody/SAF No	F05-023-046 F05-023

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	-38.4	27	47	400	U	H	3.78	34	57	U	-		
Carbon 14	25.4	30	49	50	U	C	81.4	38	60		105	138	
Total Strontium	4530	180	61	1.0		SR	4380	180	70		3	23	
Thorium 228	0	3.3	13		U	TH	0	3.3	13	U	-		
Thorium 230	-1.66	6.6	13	1.0	U	TH	-5.00	6.7	13	U	-		
Thorium 232	-1.66	3.3	13	1.0	U	TH	-1.67	3.3	13	U	-		
Total Uranium (ug/g)	2.24	0.26	0.13	1.0		U_T	2.16	0.25	0.13		4	31	
Uranium 233/234	0	4.8	18	1.0	U	U	2.34	4.7	18	U	-		
Uranium 235	0	5.8	22	1.0	U	U	0	5.7	22	U	-		
Uranium 238	2.39	4.8	18	1.0	U	U	0	4.7	18	U	-		
Neptunium 237	0	2.4	3.6	1.0	U	NP	3.53	4.7	3.5		200	449	
Plutonium 238	0	4.9	19	1.0	U	PU	0	4.5	17	U	-		
Plutonium 239/240	61.7	25	19	1.0		PU	55.7	23	17		10	87	
Americium 241	8.99	11	14	1.0	U	AM	4.99	6.7	13	U	-		
Iodine 129	-6.02	28	63	2.0	U	I	-2.39	23	52	U	-		
Potassium 40	U		1900		U	GAM	U		6200	U	-		
Cobalt 60	U		53	0.050	U	GAM	U		170	U	-		
Antimony 125	U		570		U	GAM	U		1800	U	-		
Cesium 134	U		140		U	GAM	U		340	U	-		
Cesium 137	872000	700	120	0.10		GAM	877000	2300	590		1	32	
Radium 226	U		250		U	GAM	U		760	U	-		
Radium 228	U		280		U	GAM	U		870	U	-		
Europium 152	U		480	0.10	U	GAM	U		1500	U	-		
Europium 154	U		170	0.10	U	GAM	U		520	U	-		
Europium 155	U		280	0.10	U	GAM	U		860	U	-		
Thorium 228	U		460		U	GAM	U		650	U	-		
Thorium 232	U		280		U	GAM	U		870	U	-		
Uranium 235	U		450		U	GAM	U		1400	U	-		

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-07 B1D9Y4

DUPLICATE, cont.

SDG 7288		Client/Case no Hanford	SDG H3228
Contact Melissa C. Mannion		Contract No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R506205-07	Lab sample id R506205-03	Client sample id B1D9Y4	
Dept sample id 7288-007	Dept sample id 7288-003	Location/Matrix 216-A-8, Rad Int 1	SOLID
	Received 06/23/05	Collected/Weight 06/08/05 09:20	100 g
% solids 94.5	% solids 94.5	Custody/SAF No F05-023-046	F05-023

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Uranium 238	U		6300		U	GAM	U		20000	U	-		
Americium 241	U		430		U	GAM	U		1300	U	-		

216A8 Crib Charactrization Borehole

QC-DUP#3 53511

Lab id EBERLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-10 B1D9Y4

DUPLICATE

SDG 7288			Client/Case no Hanford	SDG H3228	
Contact Melissa C. Mannion			Contract No. 630		
DUPLICATE		ORIGINAL			
Lab sample id R506205-10	Lab sample id R506205-03		Client sample id B1D9Y4		
Dept sample id 7288-010	Dept sample id 7288-003		Location/Matrix 216-A-8, Rad Int 1	SOLID	
	Received 06/23/05		Collected/Weight 06/08/05 09:20	100 g	
% solids 94.5	% solids 94.5		Custody/SAF No F05-023-046	F05-023	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Technetium 99	63.7	11	9.1	15		TC	79.6	12	10		22	40	

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	1.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-01 B1D7C9

DATA SHEET

SDG	7288	Client/Case no	Hanford	SDG H3228	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R506205-01	Client sample id	B1D7C9		
Dept sample id	7288-001	Location/Matrix	216-A-8, I-3	SOLID	
Received	06/23/05	Collected/Weight	06/14/05 13:55	155 g	
% solids	97.2	Custody/SAF No	F05-023-017	F05-023	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	4.54	1.5	2.3	400		H
Carbon 14	14762-75-5	-0.510	1.3	2.3	50	U	C
Technetium 99	14133-76-7	0.156	0.18	0.53	15	U	TC
Iodine 129	15046-84-1	0.089	0.68	1.5	2.0	U	I
Potassium 40	13966-00-2	7.90	1.0	0.69			GAM
Cobalt 60	10198-40-0	U		0.070	0.050	U	GAM
Antimony 125	14234-35-6	U		0.16		U	GAM
Cesium 134	13967-70-9	U		0.089		U	GAM
Cesium 137	10045-97-3	0.432	0.096	0.078	0.10		GAM
Radium 226	13982-63-3	0.224	0.13	0.12			GAM
Radium 228	15262-20-1	U		0.46		U	GAM
Europium 152	14683-23-9	U		0.21	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.556	0.14	0.11			GAM
Thorium 232	TH-232	U		0.46		U	GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-02 B1D7D0

DATA SHEET

SDG	7288	Client/Case no	Hanford SDG H3228
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R506205-02	Client sample id	B1D7D0
Dept sample id	7288-002	Location/Matrix	216-A-8, I-3 SOLID
Received	06/23/05	Collected/Weight	06/14/05 13:55 147 g
% solids	97.4	Custody/SAF No	F05-023-051 F05-023

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	3.24	1.6	2.5	400		H
Carbon 14	14762-75-5	-0.031	1.6	2.7	50	U	C
Technetium 99	14133-76-7	0.093	0.25	0.47	15	U	TC
Thorium 228	14274-82-9	0.551	0.28	0.26			TH
Thorium 230	14269-63-7	0.378	0.28	0.26	1.0		TH
Thorium 232	TH-232	0.447	0.28	0.26	1.0		TH
Neptunium 237	13994-20-2	0	0.022	0.054	1.0	U	NP
Iodine 129	15046-84-1	-0.045	0.56	1.2	2.0	U	I
Potassium 40	13966-00-2	13.9	1.6	1.0			GAM
Cobalt 60	10198-40-0	U		0.094	0.050	U	GAM
Antimony 125	14234-35-6	U		0.19		U	GAM
Cesium 134	13967-70-9	U		0.10		U	GAM
Cesium 137	10045-97-3	0.660	0.11	0.11	0.10		GAM
Radium 226	13982-63-3	0.411	0.19	0.17			GAM
Radium 228	15262-20-1	0.809	0.39	0.41			GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.28	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.707	0.12	0.14			GAM
Thorium 232	TH-232	0.809	0.39	0.41			GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-03 B1D9Y4

DATA SHEET

SDG	7288	Client/Case no	Hanford SDG H3228
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R506205-03	Client sample id	B1D9Y4
Dept sample id	7288-003	Location/Matrix	216-A-8, Rad Int 1 SOLID
Received	06/23/05	Collected/Weight	06/08/05 09:20 100 g
% solids	94.5	Custody/SAF No	F05-023-046 F05-023

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	3.78	34	57	400	U	H
Carbon 14	14762-75-5	81.4	38	60	50		C
Total Strontium	SR-RAD	4380	180	70	1.0		SR
Technetium 99	14133-76-7	79.6	12	10	15		TC
Thorium 228	14274-82-9	0	3.3	13		U	TH
Thorium 230	14269-63-7	-5.00	6.7	13	1.0	U	TH
Thorium 232	TH-232	-1.67	3.3	13	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	2.16	0.25	0.13	1.0		U_T
Uranium 233/234	U-233/234	2.34	4.7	18	1.0	U	U
Uranium 235	15117-96-1	0	5.7	22	1.0	U	U
Uranium 238	U-238	0	4.7	18	1.0	U	U
Neptunium 237	13994-20-2	3.53	4.7	3.5	1.0		NP
Plutonium 238	13981-16-3	0	4.5	17	1.0	U	PU
Plutonium 239/240	PU-239/240	55.7	23	17	1.0		PU
Americium 241	14596-10-2	4.99	6.7	13	1.0	U	AM
Iodine 129	15046-84-1	-2.39	23	52	2.0	U	I
Potassium 40	13966-00-2	U		6200		U	GAM
Cobalt 60	10198-40-0	U		170	0.050	U	GAM
Antimony 125	14234-35-6	U		1800		U	GAM
Cesium 134	13967-70-9	U		340		U	GAM
Cesium 137	10045-97-3	877000	2300	590	0.10		GAM
Radium 226	13982-63-3	U		760		U	GAM
Radium 228	15262-20-1	U		870		U	GAM
Europium 152	14683-23-9	U		1500	0.10	U	GAM
Europium 154	15585-10-1	U		520	0.10	U	GAM
Europium 155	14391-16-3	U		860	0.10	U	GAM
Thorium 228	14274-82-9	U		650		U	GAM
Thorium 232	TH-232	U		870		U	GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-03 **B1D9Y4**

DATA SHEET, cont

SDG	7288	Client/Case no	Hanford	SDG H3228	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R506205-03	Client sample id	B1D9Y4		
Dept sample id	7288-003	Location/Matrix	216-A-8, Rad Int 1	SOLID	
Received	06/23/05	Collected/Weight	06/08/05 09:20	100 g	
% solids	94.5	Custody/SAF No	F05-023-046	F05-023	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 235	15117-96-1	U		1400		U	GAM
Uranium 238	U-238	U		20000		U	GAM
Americium 241	14596-10-2	U		1300		U	GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-04 **B1D9Y5**

DATA SHEET

SDG	7288	Client/Case no	Hanford SDG H3228
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R506205-04	Client sample id	B1D9Y5
Dept sample id	7288-004	Location/Matrix	216-A-8, Rad Int 2 SOLID
Received	06/23/05	Collected/Weight	06/08/05 14:25 70 g
% solids	94.4	Custody/SAF No	F05-023-047 F05-023

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.890	1.5	2.4	400	U	H
Carbon 14	14762-75-5	-0.144	1.4	2.5	50	U	C
Total Strontium	SR-RAD	0.173	0.14	0.24	1.0	U	SR
Technetium 99	14133-76-7	0.992	0.27	0.53	15		TC
Thorium 228	14274-82-9	0.298	0.22	0.28			TH
Thorium 230	14269-63-7	0.260	0.30	0.28	1.0	U	TH
Thorium 232	TH-232	0.706	0.30	0.28	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.997	0.12	0.013	1.0		U_T
Uranium 233/234	U-233/234	0.258	0.14	0.18	1.0		U
Uranium 235	15117-96-1	0.057	0.057	0.22	1.0	U	U
Uranium 238	U-238	0.469	0.19	0.18	1.0		U
Neptunium 237	13994-20-2	0.015	0.015	0.011	1.0		NP
Plutonium 238	13981-16-3	0.023	0.047	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0.023	0.047	0.18	1.0	U	PU
Americium 241	14596-10-2	-0.054	0.027	0.10	1.0	U	AM
Iodine 129	15046-84-1	0.209	0.77	1.7	2.0	U	I
Potassium 40	13966-00-2	9.86	1.8	1.7			GAM
Cobalt 60	10198-40-0	U		0.21	0.050	U	GAM
Antimony 125	14234-35-6	U		0.42		U	GAM
Cesium 134	13967-70-9	U		0.26		U	GAM
Cesium 137	10045-97-3	1.36	0.17	0.17	0.10		GAM
Radium 226	13982-63-3	0.300	0.23	0.29			GAM
Radium 228	15262-20-1	1.10	0.62	0.74			GAM
Europium 152	14683-23-9	U		0.48	0.10	U	GAM
Europium 154	15585-10-1	U		0.60	0.10	U	GAM
Europium 155	14391-16-3	U		0.24	0.10	U	GAM
Thorium 228	14274-82-9	0.699	0.22	0.20			GAM
Thorium 232	TH-232	1.10	0.62	0.74			GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

R506205-04 **B1D9Y5**

DATA SHEET, cont

SDG	7288	Client/Case no	Hanford SDG H3228
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R506205-04	Client sample id	B1D9Y5
Dept sample id	7288-004	Location/Matrix	216-A-8, Rad Int 2 SOLID
Received	06/23/05	Collected/Weight	06/08/05 14:25 70 g
% solids	94.4	Custody/SAF No	F05-023-047 F05-023

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 235	15117-96-1	U		0.44		U	GAM
Uranium 238	U-238	U		22		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

216A8 Crib Charactrization Borehole

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test AM	Matrix SOLID
SDG 7288	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H3228	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7132-197						
B1D9Y4	R506205-03			7288-003	4.99	U
B1D9Y5	R506205-04			7288-004	U	
BLK (QC ID=53510)	R506205-06			7288-006	U	
LCS (QC ID=53509)	R506205-05			7288-005	ok	
Duplicate (R506205-03)	R506205-07			7288-007	-	U
Nominal values and limits from method 216A8 Crib Charactrization Borehole				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 5.0 %				Reference Lab Notebook 7132 pg. 197											
B1D9Y4	R506205-03			13	0.0050			69		243			66	08/13/05	08/13	SS-059
B1D9Y5	R506205-04			0.10	0.500			81		243			66	08/13/05	08/13	SS-060
BLK (QC ID=53510)	R506205-06			0.14	0.500			59		244				08/13/05	08/13	SS-062
LCS (QC ID=53509)	R506205-05			0.12	0.500			67		243				08/13/05	08/13	SS-061
Duplicate (R506205-03) (QC ID=53511)	R506205-07			14	0.0050			69		240			66	08/13/05	08/13	SS-063
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMIS0_IE_PLATE_AEA
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	5.5	± 15
FOR 5 SAMPLES	YIELD	69	± 16

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test NP Matrix SOLID
SDG 7288
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3228

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7132-197						
B1D7D0	R506205-02			7288-002	U	
B1D9Y4	R506205-03			7288-003	3.53	
B1D9Y5	R506205-04			7288-004	0.015	
BLK (QC ID=53510)	R506205-06			7288-006	U	
LCS (QC ID=53509)	R506205-05			7288-005	ok	
Duplicate (R506205-03)	R506205-07			7288-007	ok	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
216A8 Crib Charactrization Borehole						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 5.0 %				Reference Lab Notebook 7132 pg. 197											
B1D7D0	R506205-02			0.054	0.500			43		1107			38	07/22/05	07/22	SS-059
B1D9Y4	R506205-03			3.5	0.0050			20		1107			44	07/22/05	07/22	SS-060
B1D9Y5	R506205-04			0.011	0.500			63		1107			44	07/22/05	07/22	SS-061
BLK (QC ID=53510)	R506205-06			0.027	0.500			31		1107				07/22/05	07/22	SS-063
LCS (QC ID=53509)	R506205-05			0.056	0.500			33		1107				07/22/05	07/22	SS-062
Duplicate (R506205-03) (QC ID=53511)	R506205-07			3.6	0.0050			20		1107			44	07/22/05	07/22	SS-064
Nominal values and limits from method				1.0	0.500			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	1.2	±	3.6
FOR 6 SAMPLES	YIELD	35	±	32

Lab id EBERLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test PU Matrix SOLID
SDG 7288
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3228

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240
Preparation batch 7132-197							
B1D9Y4	R506205-03			7288-003	U		55.7
B1D9Y5	R506205-04			7288-004	U		U
BLK (QC ID=53510)	R506205-06			7288-006	U		U
LCS (QC ID=53509)	R506205-05			7288-005	ok		ok
Duplicate (R506205-03)	R506205-07			7288-007	-	U	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0

216A8 Crib Charactrization Borehole

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM KeV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197 2σ prep error 5.0 % Reference Lab Notebook 7132 pg. 197																
B1D9Y4	R506205-03			17	0.0050			96		120			55	08/01/05	08/02	SS-033
B1D9Y5	R506205-04			0.18	0.500			97		120			55	08/01/05	08/02	SS-034
BLK (QC ID=53510)	R506205-06			0.20	0.500			83		120				08/01/05	08/02	SS-036
LCS (QC ID=53509)	R506205-05			0.19	0.500			89		123				08/01/05	08/03	SS-059
Duplicate (R506205-03) (QC ID=53511)	R506205-07			19	0.0050			63		121			55	08/01/05	08/02	SS-042
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 7.3 ± 20
YIELD 86 ± 28

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test TH Matrix SOLID
SDG 7288
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3228

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7132-197					
B1D7D0	R506205-02			7288-002	0.378
B1D9Y4	R506205-03			7288-003	U
B1D9Y5	R506205-04			7288-004	U
BLK (QC ID=53510)	R506205-06			7288-006	U
LCS (QC ID=53509)	R506205-05			7288-005	ok
Duplicate (R506205-03)	R506205-07			7288-007	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
216A8 Crib Charactrization Borehole					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ . g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 5.0 %				Reference Lab Notebook 7132 pg. 197											
B1D7D0	R506205-02			0.26	0.250			89		167			39	07/23/05	07/23	SS-055
B1D9Y4	R506205-03			13	0.0050			93		167			45	07/23/05	07/23	SS-056
B1D9Y5	R506205-04			0.28	0.250			87		167			45	07/23/05	07/23	SS-057
BLK (QC ID=53510)	R506205-06			0.25	0.250			98		166				07/23/05	07/23	SS-059
LCS (QC ID=53509)	R506205-05			0.32	0.250			79		167				07/23/05	07/23	SS-058
Duplicate (R506205-03) (QC ID=53511)	R506205-07			13	0.0050			93		167			45	07/23/05	07/23	SS-060
Nominal values and limits from method				1.0	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 4.5 ± 13
YIELD 90 ± 13

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test U	Matrix SOLID
SDG 7288	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H3228	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 7132-197														
B1D9Y4	R506205-03			7288-003	2.34	U	U		U					
B1D9Y5	R506205-04			7288-004	0.258		U		0.469		55	37	12	13
BLK (QC ID=53510)	R506205-06			7288-006	U		U		U					
LCS (QC ID=53509)	R506205-05			7288-005	ok		ok		ok					
Duplicate (R506205-03)	R506205-07			7288-007	-	U	-	U	-	U				
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0		1.0		100		4	
216A8 Crib Charactrization Borehole											Averages 55		12	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 5.0 %			Reference Lab Notebook 7132 pg. 197												
B1D9Y4	R506205-03			22	0.0050			95		119			52	07/29/05	07/30	SS-036
B1D9Y5	R506205-04			0.22	0.500			94		120			52	07/29/05	07/30	SS-039
BLK (QC ID=53510)	R506205-06			0.21	0.500			95		120				07/29/05	07/30	SS-031
LCS (QC ID=53509)	R506205-05			0.93	0.500			89		120				07/29/05	07/30	SS-042
Duplicate (R506205-03) (QC ID=53511)	R506205-07			22	0.0050			90		120			52	07/29/05	07/30	SS-032
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	9.1	± 24
FOR 5 SAMPLES	YIELD	93	± 6

Lab id	EBRINE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test SR	Matrix SOLID
SDG 7288	
Contact Melissa C. Mannion	

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H3228	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUP-FIX	PLANCHET	Total Strontium
Preparation batch 7132-197					
B1D9Y4	R506205-03			7288-003	4380
B1D9Y5	R506205-04			7288-004	U
BLK (QC ID=53510)	R506205-06			7288-006	U
LCS (QC ID=53509)	R506205-05			7288-005	ok
Duplicate (R506205-03)	R506205-07			7288-007	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
216A8 Crib Charactrization Borehole					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUP-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 197															
B1D9Y4	R506205-03			70	0.0050			84		100			57	08/04/05	08/04	GRB-226
B1D9Y5	R506205-04			0.24	1.00			94		100			57	08/04/05	08/04	GRB-228
BLK (QC ID=53510)	R506205-06			0.24	1.00			83		200				08/04/05	08/04	GRB-221
LCS (QC ID=53509)	R506205-05			0.28	1.00			84		100				08/04/05	08/04	GRB-230
Duplicate (R506205-03) (QC ID=53511)	R506205-07			61	0.0050			84		100			57	08/04/05	08/04	GRB-225
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	
		SRTOT_SEP_PRECIP_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD	MDA	26	± 72
FOR 5 SAMPLES	YIELD	86	± 9

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test TC Matrix SOLID	Client Hanford
SDG 7288	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H3228

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99
Preparation batch 7132-197					
B1D7C9	R506205-01		A1	7288-001	U
B1D7D0	R506205-02		A1	7288-002	U
B1D9Y4	R506205-03		A1	7288-003	79.6
B1D9Y5	R506205-04		A1	7288-004	0.992
BLK (QC ID=54124)	R506205-09			7288-009	U
LCS (QC ID=54123)	R506205-08			7288-008	ok
Duplicate (R506205-03)	R506205-10			7288-010	ok
Nominal values and limits from method 216A8 Crib Charactrization Borehole				RDLs (pCi/g)	15

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 197															
B1D7C9	R506205-01		A1	0.53	1.03			94		50			74	08/24/05	08/27	GRB-217
B1D7D0	R506205-02		A1	0.47	1.15			94		50			76	08/24/05	08/29	GRB-222
B1D9Y4	R506205-03		A1	10	0.0600			94		50			80	08/24/05	08/27	GRB-219
B1D9Y5	R506205-04		A1	0.53	1.02			92		50			82	08/24/05	08/29	GRB-224
BLK (QC ID=54124)	R506205-09			0.54	1.00			98		50				08/24/05	08/27	GRB-227
LCS (QC ID=54123)	R506205-08			0.66	1.00			97		50				08/24/05	08/27	GRB-226
Duplicate (R506205-03) (QC ID=54125)	R506205-10			9.1	0.0600			92		50			80	08/24/05	08/27	GRB-228
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES.	REFERENCE	
	TC99_TR_SEP_LSC	
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD				
FOR 7 SAMPLES	MDA	3.1	±	8.8
	YIELD	94	±	5

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test GAM Matrix SOLID
SDG 7288
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3228

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 7132-197A							
B1D7C9	R506205-01			7288-001	U		0.432
B1D7D0	R506205-02			7288-002	U		0.650
B1D9Y4	R506205-03			7288-003	U		877000
B1D9Y5	R506205-04			7288-004	U		1.36
BLK (QC ID=53510)	R506205-06			7288-006	U		U
LCS (QC ID=53509)	R506205-05			7288-005	ok		ok
Duplicate (R506205-03)	R506205-07			7288-007	-	U	ok
Nominal values and limits from method 216A8 Crib Charactrization Borehole				RDLs (pCi/g)	0.050		0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197A 2σ prep error 15.0 % Reference Lab Notebook 7132 pg. 197																
B1D7C9	R506205-01			0.56	61.1					439			29	07/12/05	07/13	PD,04,00
B1D7D0	R506205-02			0.77	57.2					578			29	07/12/05	07/13	PD,03,00
B1D9Y4	R506205-03			3900	5.03					116			42	07/12/05	07/20	SP,02,03
B1D9Y5	R506205-04			1.6	16.0					602			35	07/12/05	07/13	SP,07,00
BLK (QC ID=53510)	R506205-06			2.3	16.0					544				07/12/05	07/14	PD,07,00
LCS (QC ID=53509)	R506205-05			1.2	16.0					109				07/12/05	07/19	PD,07,00
Duplicate (R506205-03) (QC ID=53511)	R506205-07			1800	5.03					1090			41	07/12/05	07/19	SP,02,03
Nominal values and limits from method				0.050	16.0					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-100	Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 820 ± 3000
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test I Matrix SOLID
SDG 7288
Contact Melissa C. Mannion

METHOD SUMMARY

IODINE 129 IN SOLIDS
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3228

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Iodine 129	
Preparation batch 7132-197						
B1D7C9	R506205-01			7288-001	U	
B1D7D0	R506205-02			7288-002	U	
B1D9Y4	R506205-03			7288-003	U	
B1D9Y5	R506205-04			7288-004	U	
BLK (QC ID=53510)	R506205-06			7288-006	U	
LCS (QC ID=53509)	R506205-05			7288-005	ok	
Duplicate (R506205-03)	R506205-07			7288-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	2.0	
216A8 Crib Charactrization Borehole						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 197															
B1D7C9	R506205-01			1.5	1.00			44		897			61	08/12/05	08/14	XSPEC-004
B1D7D0	R506205-02			1.2	1.00			51		897			61	08/12/05	08/14	XSPEC-002
B1D9Y4	R506205-03			52	0.0518			43		898			67	08/12/05	08/14	XSPEC-016
B1D9Y5	R506205-04			1.7	1.00			45		549			68	08/12/05	08/15	XSPEC-004
BLK (QC ID=53510)	R506205-06			1.4	1.00			43		625				08/12/05	08/15	XSPEC-002
LCS (QC ID=53509)	R506205-05			3.7	1.00			56		326				08/12/05	08/17	XSPEC-016
Duplicate (R506205-03) (QC ID=53511)	R506205-07			63	0.0515			42		625			68	08/12/05	08/15	XSPEC-016
Nominal values and limits from method				2.0	1.00			20-105		300			180			

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	SPP-062	Sample Aliquoting, rev 0
	CP-024	Iodine-129, Sample Dissolution, rev 5
	CP-530	Iodine-129 Purification, rev 1

AVERAGES ± 2 SD	MDA 18 ± 55
FOR 7 SAMPLES	YIELD 46 ± 10

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test U T	Matrix SOLID
SDG 7288	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, TOTAL IN SOLIDS

KINETIC PHOSPHORIMETRY (KPA)

Client Hanford	
Contract No. 630	
Contract SDG H3228	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	FLANCHET	Total Uranium
Preparation batch 7132-197					
B1D9Y4	R506205-03			7288-003	2.16
B1D9Y5	R506205-04			7288-004	0.997
BLK (QC ID=53510)	R506205-06			7288-006	U
LCS (QC ID=53509)	R506205-05			7288-005	ok
Duplicate (R506205-03)	R506205-07			7288-007	ok
Nominal values and limits from method			RDLs (ug/g)		1.0
216A8 Crib Charactrization Borehole					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 9.0 %			Reference Lab Notebook 7132 pg. 197												
B1D9Y4	R506205-03			0.13	0.0050								55	08/02/05	08/02	KPA-001
B1D9Y5	R506205-04			0.013	0.0500								55	08/02/05	08/02	KPA-001
BLK (QC ID=53510)	R506205-06			0.13	0.0050									08/02/05	08/02	KPA-001
LCS (QC ID=53509)	R506205-05			1.3	0.0050									08/02/05	08/02	KPA-001
Duplicate (R506205-03) (QC ID=53511)	R506205-07			0.13	0.0050								55	08/02/05	08/02	KPA-001
Nominal values and limits from method				1.0	0.0050								180			

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

AVERAGES ± 2 SD	MDA 0.34	± 1.1
FOR 5 SAMPLES	YIELD	±

Lab id	EBERLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test C Matrix SOLID
SDG 7288
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H3228

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7132-197						
B1D7C9	R506205-01			7288-001	U	
B1D7D0	R506205-02			7288-002	U	
B1D9Y4	R506205-03			7288-003	81.4	
B1D9Y5	R506205-04			7288-004	U	
BLK (QC ID=53510)	R506205-06			7288-006	U	
LCS (QC ID=53509)	R506205-05			7288-005	ok	
Duplicate (R506205-03)	R506205-07			7288-007	ok	U
Nominal values and limits from method				RDLs (pCi/g)	50	
216A8 Crib Charactrization Borehole						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 197															
B1D7C9	R506205-01			2.3	0.522			100		50			45	07/28/05	07/29	LSC-005
B1D7D0	R506205-02			2.7	0.481			100		50			45	07/28/05	07/29	LSC-005
B1D9Y4	R506205-03			60	0.0212			100		50			51	07/28/05	07/29	LSC-005
B1D9Y5	R506205-04			2.5	0.500			100		50			51	07/28/05	07/29	LSC-005
BLK (QC ID=53510)	R506205-06			3.2	0.400			100		50				07/28/05	07/28	LSC-005
LCS (QC ID=53509)	R506205-05			6.7	0.400			100		11				07/28/05	07/29	LSC-005
Duplicate (R506205-03) (QC ID=53511)	R506205-07			49	0.0254			100		50			51	07/28/05	07/29	LSC-005
Nominal values and limits from method				50	0.400					25			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 18 ± 50
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

Test H	Matrix SOLID
SDG 7288	
Contact Melissa C. Mannion	

METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H3228	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7132-197						
B1D7C9	R506205-01			7288-001	4.54	
B1D7D0	R506205-02			7288-002	3.24	
B1D9Y4	R506205-03			7288-003	U	
B1D9Y5	R506205-04			7288-004	U	
BLK (QC ID=53510)	R506205-06			7288-006	U	
LCS (QC ID=53509)	R506205-05			7288-005	ok	
Duplicate (R506205-03)	R506205-07			7288-007	-	U

Nominal values and limits from method RDLs (pCi/g) 400

216A8 Crib Charactrization Borehole

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7132-197	2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 197															
B1D7C9	R506205-01			2.3	0.522			100		120			45	07/28/05	07/29	LSC-004
B1D7D0	R506205-02			2.5	0.481			100		120			45	07/28/05	07/29	LSC-004
B1D9Y4	R506205-03			57	0.0212			100		120			51	07/28/05	07/29	LSC-004
B1D9Y5	R506205-04			2.4	0.500			100		120			51	07/28/05	07/29	LSC-004
BLK (QC ID=53510)	R506205-06			3.0	0.400			100		120				07/28/05	07/29	LSC-004
LCS (QC ID=53509)	R506205-05			5.4	0.400			100		37				07/28/05	07/30	LSC-004
Duplicate (R506205-03) (QC ID=53511)	R506205-07			47	0.0254			100		120			51	07/28/05	07/29	LSC-004
Nominal values and limits from method				400	0.400					25			180			

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

AVERAGES ± 2 SD	MDA	17	±	48
FOR 7 SAMPLES	YIELD	100	±	0

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-QMS
Version	3.06
Report date	08/31/05

SDG 7288
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3228

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 08/31/05

SDG	7288
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H3228

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	08/31/05

SDG 7288
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3228

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 08/31/05

SDG 7288
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3228

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 08/31/05

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 7288
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3228

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 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG 7288	Client Hanford
Contact Melissa C. Mannion	Contract No. 630
	Case no SDG H3228

REPORT GUIDE

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	EBRLNB
Protocol	Hanford
Version	Ver 1.0
Form	DVD-RG
Version	3.06
Report date	08/31/05

SDG 7288
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3228

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 08/31/05

SDG 7288
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3228

DUPLICATE

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/31/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3228

SDG	7288
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H3228

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	08/31/05

SDG 7288
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3228

MATRIX SPIKE

for the recovery.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/31/05

SDG 7288	Client Hanford
Contact Melissa C. Mannion	Contract No. 630
	Case no SDG H3228

REPORT GUIDE

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	08/31/05

METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

SDG 7288
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3228

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/31/05

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F05-023-017	PAGE 1 DF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Mokler/Weis/Tyra	TRENT, SJ	373-5869	TRENT, SJ	AIR QUALITY [ ]	45 Days / 45 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
216-A-8, I-3	216-A-8 Crib Characterization Borehole H3228 (7288)		F05-023		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**COA**	**METHOD OF SHIPMENT**		
GRP-03-009	HNF-N-336-1	119152E510	FEDERAL EXPRESS		
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
Eberline Services	SUPTC 15772		SUPTC 15772		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	None
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegitation W=Water WI=Wipe X=Other	Rad tuto B1D7D1	TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
		VOLUME	120mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1D7C9	SOIL	6/14/05	1355	X

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JSPofo/ 6-14-05	1440	site RMM Fridge 6-14-05	1440
site fridge 6-15-05	1300	JSPofo/ 6-15-05	1300
JSPofo/ 6-15-05	1500	MMPoy/ RM #3 6-15-05	1500
MP Poy RM3 6/22/05	0935	M.H. Bauhuis M.G. Bauhuis 6/22/05	0935
M.H. Bauhuis M.G. Bauhuis 6/22/05	0935	FED EX	
FED EX 06/23/05		MFM 06/23/05	9:15

SPECIAL INSTRUCTIONS

(1)Carbon-14; ~~Neptunium-237~~; Gamma Spec - ~~Radium (Radium-226, Radium-228)~~ Iodine-129; ~~Isotopic Thorium (Thorium-232)~~ Technetium-99; Tritium - H3;

MAO 6/6/05

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

A-6003-618(03/03)

0000054

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F05-023-051	PAGE 1 OF 1

COLLECTOR: Pope/Pfister/Mokler/Weis/Tyra	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: 8N	DATA TURNAROUND: 45 Days / 45 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 216-A-8, I-3	PROJECT DESIGNATION: 216-A-8 Crib Characterization Borehole H3228 (7288)	SAF NO.: F05-023	
ICE CHEST NO.: GRP-03-009	FIELD LOGBOOK NO.: HNF-N-336-1	COA: 119152E510	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: See PTR 15772		BILL OF LADING/AIR BILL NO.: See PTR 15772

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Rad tu to B1D7D1

SPECIAL HANDLING AND/OR STORAGE:

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1D7D0	SOIL	6/14/05	1355	X

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. Pfister / Rocky	6/14/05 1440	A8 SITE FRIG	6/14/05 1440
Site Fridge	6-15-05 1300	J Stamp / [illegible]	6-15-05 1300
J Stamp / [illegible]	6-15-05 1500	HW-OUL / REF #3	6-15-05 1500
MO-026 KUJ3	6/22/05 0995	M.A. Bauhus	6/22/05 0935
M.A. Bauhus	6/22/05 0935	FedEx	
FED EX	06/23/05	LFM	06/23/05 9:15
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

(1)Carbon-14; Neptunium-237; Gamma Spec - Radium {Radium-226, Radium-228} Iodine-129; Isotopic Thorium {Thorium-232} Technetium-99; Tritium - H3;

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

5500000

A-6003-518(03/03)

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F05-023-046	PAGE 1 OF 1

COLLECTOR Pope/Pfister/Mokler/Weis/Tyra	**COMPANY CONTACT** TRENT, SJ	**TELEPHONE NO.** 373-5869	**PROJECT COORDINATOR** TRENT, SJ	**PRICE CODE** 8N	**DATA TURNAROUND**
SAMPLING LOCATION 216-A-B, Rad Int 1	**PROJECT DESIGNATION** 216-A-8 Crib Characterization Borehole H3228 (7288)		**SAF NO.** F05-023	**AIR QUALITY** ☐	45 Days / 45 Days
ICE CHEST NO. S/N 04/04-010038	**FIELD LOGBOOK NO.** HNF-N-336-1	**COA** 119152ES10	**METHOD OF SHIPMENT** FEDERAL EXPRESS		
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** 2U RSR E0027000		**BILL OF LADING/AIR BILL NO.** 2U RSR E0027000		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Radioactive tie to B1D9C0

SPECIAL HANDLING AND/OR STORAGE
Lab is to utilize single 60 mL bottle for all analyses on chain of custody. Utilize full 60mL bottle for laboratory.

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

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1D9Y4	SOIL	6/8/05	0920	X

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JS Pfister / [illegible] 6-8-05	1030	Site RMA Fridge 6-8-05	1034
Site Fridge 6-15-05	1300	JS Pfister / [illegible] 6-15-05	1300
JS Pfister / [illegible] 6-15-05	1500	Moore RCC #3 6-15-05	1500
MD-Oak Ridge 6/21/05	1200	M.H. Bauchmann / M.G. Bauchmann 6/21/05	1200
M.H. Bauchmann / M.G. Bauchmann 6/21/05	1200	FED EX	
FEDEX 6/23/05		Alex Lelumhuf 6/23/05	10:00

SPECIAL INSTRUCTIONS
(1)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Gamma Spec - Add-on {Antimony-125, Cesium-134} Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 – Total Sr; Total Uranium; Americium-241; Carbon-14; Neptunium-237; Gamma Spec - Radium {Radium-226, Radium-228} Iodine-129; Isotopic Thorium {Thorium-232} Technetium-99; Tritium - H3;

[illegible] 6/23/05 10:00

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

A-6003-618(03/03)

00000056

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F05-023-047

COLLECTOR: Pope/Pfister/Mokler/Weis/Tyra	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 216-A-8, Rad Int 2	PROJECT DESIGNATION: 216-A-8 Crib Characterization Borehole H3228 (7288)		SAF NO.: F05-023
ICE CHEST NO.: GRP-03-009	FIELD LOGBOOK NO.: HNF-N-336-1	COA: 119152ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: See PTR 15772		BILL OF LADING/AIR BILL NO.: See PTR 15772

PRICE CODE: 8N

AIR QUALITY: ☐

DATA TURNAROUND: 45 Days / 45 Days

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Radioactive tie to ~~B1D9C0~~ B1D9C1 18 6-15-05

SPECIAL HANDLING AND/OR STORAGE
Lab is to utilize single 60 mL bottle for all analyses on chain of custody.

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

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1D9Y5	SOIL	6-8-05	1425	X

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JS Pfister/ 4 Stiffer	6-8-05 1530	Site RWM Fridge	6-8-05 1530
SITE FRIO	6/15/05 1256	R. Pfister/	6/15/05 1256
R. Pfister/	6/15/05 1500	MO-026 REFIR 3	6/15/05 1500
MO-026 REFIR 3	6/22/05 0935	M.A. Buchanan	6/22/05 0935
M.A. Buchanan	6/23/05	Fed Ex	
FED EX	06/23/05	RFM	06/23/05 9:15
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} Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Total Uranium; Americium-241; Carbon-14; Neptunium-237; Gamma Spec - Radium {Radium-226, Radium-228} Iodine-129; Isotopic Thorium {Thorium-232} Technetium-99; Tritium - H3;

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

A-6003-618(03/03)

00000057

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: FLUOR HANFORD City MCHLAND State CA

Date/Time received 06/23/05 9:15 CoC No. F05-023-014

Container I.D. No. GRP-003 003 Requested TAT (Days) _____ P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [X] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [X]
6. Number of samples in shipping container: 1 Sample Matrix _____
7. Number of containers per sample: 2 (Or see CoC _____)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH _____ Preservative _____
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by [illegible] Date: 06/23/05 Time: 12:30

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

Ion Chamber Ser. No. _____ Calibration date _____
Alpha Meter Ser. No. _____ Calibration date _____
Beta/Gamma Meter Ser. No. _____ Calibration date _____

LvLI
LIONVILLE LABORATORY INC.

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

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 #	0506L810
SDG #	H3228
SAF #	F05-023
Date Received	6-22-05
# Samples	2
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\tmu-hanford\data\fc_ltrs.doc

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

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F05-023 H3228

DATE RECEIVED: 06/22/05 LVL LOT # :0506L810

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B1D7D0						
% SOLIDS	001	S	05L%S085	06/14/05	06/23/05	06/23/05
CHROMIUM VI	001	S	05LVI042	06/14/05	06/23/05	06/23/05
NITRATE NITRITE	001	S	05LN3A36	06/14/05	07/11/05	07/12/05
NITRATE NITRITE	001 REP	S	05LN3A36	06/14/05	07/11/05	07/12/05
NITRATE NITRITE	001 MS	S	05LN3A36	06/14/05	07/11/05	07/12/05
TOTAL ORGANIC CARBON	001	S	05LTZ016	06/14/05	07/13/05	07/13/05
TOTAL ORGANIC CARBON	001 REP	S	05LTZ016	06/14/05	07/13/05	07/13/05
TOTAL ORGANIC CARBON	001 MS	S	05LTZ016	06/14/05	07/13/05	07/13/05
OIL & GREASE BY GRAV	001	S	05LOG030	06/14/05	06/27/05	06/28/05
TOTAL INORGANIC CARB	001	S	05LTZA16	06/14/05	07/13/05	07/13/05
TOTAL INORGANIC CARB	001 REP	S	05LTZA16	06/14/05	07/13/05	07/13/05
B1D7C9						
% SOLIDS	002	S	05L%S085	06/14/05	06/23/05	06/23/05
CHROMIUM VI	002	S	05LVI042	06/14/05	06/23/05	06/23/05
CHROMIUM VI	002 REP	S	05LVI042	06/14/05	06/23/05	06/23/05
CHROMIUM VI	002 MS	S	05LVI042	06/14/05	06/23/05	06/23/05
CHROMIUM VI	002 MSD	S	05LVI042	06/14/05	06/23/05	06/23/05
NITRATE NITRITE	002	S	05LN3A36	06/14/05	07/11/05	07/12/05
TOTAL ORGANIC CARBON	002	S	05LTZ016	06/14/05	07/13/05	07/13/05
OIL & GREASE BY GRAV	002	S	05LOG030	06/14/05	06/27/05	06/28/05
OIL AND GREASE BY GR	002 REP	S	05LOG030	06/14/05	06/27/05	06/28/05
OIL AND GREASE BY GR	002 MS	S	05LOG030	06/14/05	06/27/05	06/28/05
TOTAL INORGANIC CARB	002	S	05LTZA16	06/14/05	07/13/05	07/13/05

LAB QC:

CHROMIUM VI	MB1	S	05LVI042	N/A	06/23/05	06/23/05
CHROMIUM VI	MB1 BS	S	05LVI042	N/A	06/23/05	06/23/05
CHROMIUM VI	MB1 BSD	S	05LVI042	N/A	06/23/05	06/23/05
NITRATE NITRITE	MB1	S	05LN3A36	N/A	07/11/05	07/12/05
NITRATE NITRITE	MB1 BS	S	05LN3A36	N/A	07/11/05	07/12/05
TOTAL ORGANIC CARBON	MB1	S	05LTZ016	N/A	07/13/05	07/13/05
TOTAL ORGANIC CARBON	MB1 BS	S	05LTZ016	N/A	07/13/05	07/13/05

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F05-023 H3228

DATE RECEIVED: 06/22/05 LVL LOT # :0506L810

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
OIL & GREASE BY GRAV	MB1	S	05LOG030	N/A	06/27/05	06/28/05
OIL AND GREASE BY GR	MB1 BS	S	05LOG030	N/A	06/27/05	06/28/05
TOTAL INORGANIC CARB	MB1	S	05LTZA16	N/A	07/13/05	07/13/05

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F05-023 H3228
LVL#: 0506L810

W.O.#: 11343-606-001-9999-00
Date Received: 06-22-05

INORGANIC NARRATIVE

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

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

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met with the exception of Total Organic Carbon (TOC) and Total Inorganic Carbon (TIC).

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 Nitrate Nitrite, TOC, Chromium VI and Oil and Grease were within the 75-125% control limits.

8. The replicate analyses for Nitrate Nitrite and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit however replicate analyses for TOC, TIC and Chromium VI were outside the control limit that may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis with the exception of TOC and TIC that 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

7/22/05
Date

njp\i06-810

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	✓ EPA 413.1
Carbon, Total Organic and Inorganic		__ 9060	✓ Lloyd Kahn (mod)/EPA 415.1 (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 07/18/05

CLIENT: TNUHANFORD F05-023 H3228 LVL LOT #: 0506L810
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B1D7D0	% Solids	98.3		%	0.01	1.0
		Chromium VI	0.20	u	MG/KG	0.20	1.0
		Nitrate Nitrite	4.0	u	MG/KG	4.0	20.0
		Total Organic Carbon	115	u	MG/KG	115	1.0
		Oil & Grease Gravimetri	680	u	MG/KG	680	1.0
		Total Inorganic Carbon	470	u	MG/KG	470	1.0
-002	B1D7C9	% Solids	98.1		%	0.01	1.0
		Chromium VI	0.27		MG/KG	0.20	1.0
		Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
		Total Organic Carbon	54.0	u	MG/KG	54.0	1.0
		Oil & Grease Gravimetri	679	u	MG/KG	679	1.0
		Total Inorganic Carbon	2250		MG/KG	131	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/18/05

CLIENT: TNUHANFORD F05-023 H3228 LVL LOT #: 0506L810
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LVI042-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
BLANK10	05LN3A36-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	05LTZ016-MB1	Total Organic Carbon	4.7	u	MG/KG	4.7	1.0
BLANK10	05LOG030-MB1	Oil & Grease Gravimetri	667	u	MG/KG	667	1.0
BLANK10	05LTZA16-MB1	Total Inorganic Carbon	4.7	u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/18/05

CLIENT: TNUHANFORD F05-023 H3228 LVL LOT #: 0506L810

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B1D7D0	Nitrate Nitrite	98.7	4.0 u	101	97.6	20.0
		Total Organic Carbon	9440	115 u	9090	104.5	1.0
-002	B1D7C9	Soluble Chromium VI	4.1	0.27	4.1	94.4	1.0
		Insoluble Chromium VI	1330	0.27	1170	113.1	100
		Oil & Grease Gravimetr	7460	679 u	7220	103.4	1.0
BLANK10	05LVI042-MB1	Soluble Chromium VI	4.0	0.20u	4.0	99.6	1.0
		Insoluble Chromium VI	1310	0.20u	1200	109.7	100
BLANK10	05LN3A36-MB1	Nitrate Nitrite	5.4	0.20u	5.0	108.4	1.0
BLANK10	05LTZ016-MB1	Total Organic Carbon	392	4.7 u	400	98.1	1.0
BLANK10	05LOG030-MB1	Oil & Grease Gravimetr	7360	667 u	7080	103.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/18/05

CLIENT: TNUHANFORD F05-023 H3228 LVL LOT #: 0506L810

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B1D7D0	Nitrate Nitrite	4.0 u	4.1 u	NC	20.0
		Total Organic Carbon	115 u	110	200	1.0
		Total Inorganic Carbon	470 u	500	200	1.0
-002REP	B1D7C9	Chromium VI	0.27	0.20u	76.9	1.0
		Oil & Grease Gravimetri	679 u	679 u	NC	1.0

Lionville Laboratory Use Only
05061810

Custody Transfer Record/Lab Work Request

Page 1 of 1

See SRC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford F05-023
Est. Final Proj. Sampling Date:
Project #: 11343-006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: Arlette Johnson
QC: Spec Del: Std TAT: 30 Days
Date Rec'd: 6-22-05 Date Due: 7/22/05

Refrigerator #																
#/Type Container	Liquid											21				
	Solid											19				
Volume	Liquid											120				
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN		Oil + Grease	Hex Chrom	TIC	TOC	NO2/NO3
		Lionville Laboratory Use Only														
												IOGSR	ICRL	ITIC	IOCF	INENC

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
S - Soil	001	B1D7D0			S	6-4-05	1355											X	X	X	X	X
SE - Sediment	002	B1D7C9			↓	↓	↓											X	X	X	X	X
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																						

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Lee Ex	D. Smith	6-22-05	0900

Relinquished by	Received by	Date	Time

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

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F05-023-052	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Mokler/Wels/Tyra	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N AIR QUALITY ☐	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-A-8, I-3	PROJECT DESIGNATION 216-A-8 Crib Characterization Borehole		SAF NO. F05-023		
ICE CHEST NO. GRP-05-001	FIELD LOGBOOK NO. HNF-N-336-1	COA 119152ES10	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO Lionville Laboratory Incorporated	OFFSITE PROPERTY NO. 24 PTR 15784		BILL OF LADING/AIR BILL NO. 24 PTR 15784		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Rad tu to B1D7P1

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool 4C
TYPE OF CONTAINER	G
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1D7D0	SOIL	6/14/05	1355	X

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. PFISTER/	6/14/05 1440	A8 SITE FRIG	6/14/05 1440
A8 SITE FRIG	6/15/05 1256	R. PFISTER/	6/15/05 1256
R. PFISTER/	6/15/05 1500	MO-026 FRIG #3	6/15/05 1500
MO-026 FRIG #3	6/21/05 0910	M.H. Bachler/M.G. Bachler	21/05 0910
M.H. Bachler/M.G. Bachler	21/05 0910	Fed Ex	
Fed Ex	6/22/05 0900		6/22/05 0900
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
(1)Oil & Grease - 413.1; Chromium Hex - 7196; TIC - 415.1M; TOC - 415.1; NO2/NO3 - 353.2;

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

A-6003-618(03/03)

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F05-023-015	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Mokler/Wels/Tyra	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N AIR QUALITY ☐	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-A-8, I-3	PROJECT DESIGNATION 216-A-8 Crib Characterization Borehole		SAF NO. F05-023		
ICE CHEST NO. GRP-05-001	FIELD LOGBOOK NO. HNF-N-336-1	COA 119152ES10	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO Lionville Laboratory Incorporated	OFFSITE PROPERTY NO. 24PTC 15784		BILL OF LADING/AIR BILL NO. 24PTC 15784		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Rad to to B1D7D1

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool 4C											
TYPE OF CONTAINER	G											
NO. OF CONTAINER(S)	1											
VOLUME	120mL											
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS											

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B1D7C9	SOIL	6/14/05	1355	X								

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
T.S. Pope / [signature] 6.14.05	1440	site Rama Friday 6.14.05	1440
site Friday 6.15.05	1300	T.S. Pope / [signature] 6.15.05	1300
T.S. Pope / [signature] 6.15.05	1500	[signature] / RCF #3 6.15.05	1500
[signature] 6/21/05	0910	[signature] / M.G. Boucher 6/21/05	0910
M.G. Boucher / M.G. Boucher 6/21/05	0910	Fed Ex	
Fed Ex 6.22.05	10900	[signature] 6.22.05	0900

SPECIAL INSTRUCTIONS
(1)Oil & Grease - 413.1; Chromium Hex - 7196; TIC - 415.1M; TOC - 415.1; NO2/NO3 - 353.2;

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:** 6.22.05

Purchase Order / Project# / SAF# / SOW# / Release #: F05-023

LvLI Batch # : 05061810 **Sample Custodian:** [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier Fed Ex		Airbill# 7905 5184 7745	
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 23 °C		Cooler # GRP05-001	
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

LVLI LIONVILLE LABORATORY INC.

Shaw™
Shaw E & I, Inc.

Geotechnical Laboratory
PO Box 4339
1570 Bear Creek Road
Oak Ridge TN 37830
(865) 482-6497

CERTIFICATE OF ANALYSIS

Stephen Trent
Fluor Hanford, Inc.
825 Jadwin Avenue
Richland, Washington 99352

August 16, 2005

AUG 2005
RECEIVED

This is the Certificate of Analysis for the following samples:

Shaw Project ID:	**Eberline - Hanford**
Shaw Project Number:	**100846.62000000**
Client Sample Data Group:	H3228
Date Received by Lab:	June 30, 2005
Number of Samples:	One (1)
Sample Type:	Soil

I. Introduction/Case Narrative

One soil sample was received by the Shaw Geotechnical Laboratory on June 30, 2005. The sample was submitted for determination of moisture content, bulk density, sieve analysis, specific gravity, and calcium carbonate content. The sample number received was B1D7C9

Please see Appendix A, Sample Number Cross Reference List; Appendix B, Analysis Results; and Appendix C, Chain-of-Custody/Sample Receipt Records.

"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 contained in this hardcopy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Reviewed and Approved:

Ralph Cole
Laboratory Manager, Geotechnical Services

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

II. Analytical Results/Methodology

REFERENCES: United States Army Corps of Engineers (USACE), Engineer Manual 1110-2-1906, *Laboratory Soils Testing*, appendix II, 1970; United States Environmental Protection Agency, SW846, *Test Methods for Examining Solid Waste, Physical/Chemical Methods*, 3rd ed., Nov 1986 (EPA SW-846). Annual Book of ASTM Standards, Section 4, Construction, Volume 04.08, *Soil and Rock (I)*, and Volume 04.09, *Soil and Rock (II)*, 2005. Shaw Environmental and Infrastructure, Standard Operating Procedures.

Moisture Content of Soil and Rock	**ASTM D 2216**
Bulk Density of Soils	**EM 1110-2-1906**
Particle-size Analysis of Soils	**ASTM D 422**
Specific Gravity of Soil	**ASTM D 854**
Calcium Carbonate Content	**ASTM D 4373**

III. Quality Control

Quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due largely to the inability of obtaining samples with known characteristics, the heterogenous nature of the samples, and quality control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification of all numerical results - raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.

- Data validation through test reasonableness - summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.

- Quality control procedures are built into most standardized geotechnical procedures. For example, liquid limit and plastic limit analyses call for re-analyses and specify acceptance criteria.

- Routine instrument calibration - instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

- Maintenance of all past calibration records - calibration records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

- Certified and trained personnel - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by Shaw.

- Quantitative analyses frequently used in geotechnical/physical testing programs do not use QC tools common to wet chemistry or radiochemistry laboratories. Measures not employed in the analysis of samples reported in this report include: laboratory control samples (LCS), blanks, matrix spikes (MS), duplicate analyses, dilutions, digestions, correction factors, surrogate sample analyses, detection limit determinations, control charts, and/or tentatively identified compounds (TICs).

IV. Data Qualification

None.

Appendix A
Sample Cross-Reference List

August 16, 2005
Stephen Trent
Fluor Hanford, Inc.
Shaw Project Name: Eberline Hanford
Shaw Project No. 100846.62000000
SDG No. H3228

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

SAMPLE NUMBER CROSS-REFERENCE LIST

LAB SAMPLE NO.	CLIENT SAMPLE NO.	MATRIX
BC0592	B1D7C9	Soil

Appendix B
Sample Test Results

August 16, 2005
Stephen Trent
Fluor Hanford, Inc.
Shaw Project Name: Eberline Hanford
Shaw Project No. 100846.62000000
SDG No. H3228

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

MOISTURE CONTENT

PROJECT NAME
Eberline Hanford

PROJECT NUMBER
100846.62000000

LAB SAMPLE NO.	CLIENT SAMPLE NO.	MOISTURE, % ASTM D 2216	MOISTURE , % SW846	SOLIDS, % SW846
BC0592	B1D7C9	2.9	2.8	97.2

ASTM D 2216 results are based on dry sample weight.
SW846 results are based on wet sample weight.
Solids content is determined by subtracting the SW846 moisture (%) from 100.

August 16, 2005
Stephen Trent
Fluor Hanford, Inc.
Shaw Project Name: Eberline Hanford
Shaw Project No. 100846.62000000
SDG No. H3228

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

BULK DENSITY/DRY DENSITY
ASTM C 2937

PROJECT NAME: **Eberline Hanford**

PROJECT NUMBER: **100846.62000000**

LAB SAMPLE NUMBER	CLIENT SAMPLE NUMBER	AVERAGE LENGTH, inches	AVERAGE DIAMETER, inches	WET WEIGHT, grams	MOISTURE CONTENT, %	BULK DENSITY, pcf	DRY DENSITY, pcf
BC0592	B1D7C9	5.3940	3.9020	2128.48	3.0	125.7	122.0

Moisture content calculated by ASTM D 2216 based on sample dry weight.
Bulk density is the weight of wet sample divided by the volume of the wet sample (as-received).
Dry density is the weight of the dry sample solids divided by the volume of the original sample.

August 16, 2005
Stephen Trent
Fluor Hanford, Inc.
Shaw Project Name: Eberline Hanford
Shaw Project No. 100846.62000000
SDG No. H3228

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

PARTICLE-SIZE DISTRIBUTION
ASTM D 422

Project Name Eberline Hanford

Project No. 100846.62000000

Field Sample No. B1D7C9

Lab Sample No. BC0592

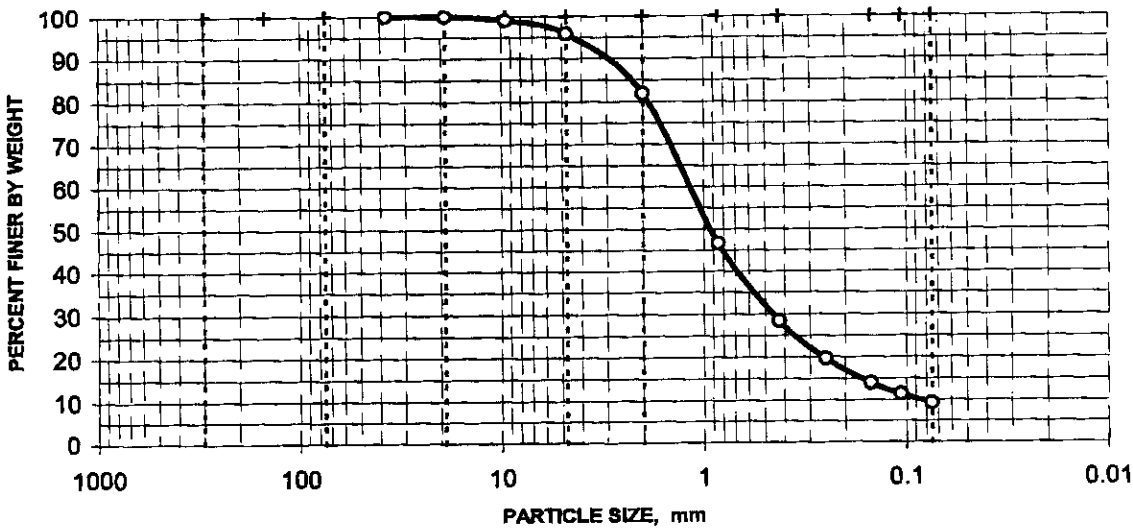
Moisture Content = 3.0%
based on dry sample weight

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	99.0%
	#4	4.750	95.8%
	#10	2.000	81.9%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	46.7%
	#40	0.425	28.5%
	#60	0.250	19.7%
	#100	0.149	14.0%
	#140	0.106	11.4%
	#200	0.075	9.3%

DISTRIBUTION CURVE



4.2% Gravel 86.5% Sand 9.3% Silt/Clay

August 16, 2005
Stephen Trent
Fluor Hanford, Inc.
Shaw Project Name: Eberline Hanford
Shaw Project No. 100846.62000000
SDG No. H3228

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

SPECIFIC GRAVITY
ASTM D 854

PROJECT NAME:
Eberline Hanford

PROJECT NUMBER:
100846.62000000

LAB SAMPLE NO.	CLIENT SAMPLE NO.	SPECIFIC GRAVITY
BC0592	B1D7C9	2.7719

August 16, 2005
Stephen Trent
Fluor Hanford, Inc.
Shaw Project Name: Eberline Hanford
Shaw Project No. 100846.62000000
SDG No. H3228

Shaw Geotechnical Laboratory
Oak Ridge TN
(865) 482-6497

Carbonate Content of Soils
ASTM D 4373

PROJECT NAME:
Eberline Hanford

PROJECT NUMBER:
100846.62000000

LAB SAMPLE NO.	CLIENT SAMPLE NO.	CO3, %
BC0592	B1D7C9	1

Appendix C
Chain-of-Custody and Request-for-Analysis Records

SDG# H3228

PAGE 1 Eberline Srvces CHAIN OF CUSTODY ORD # R5-06-206

06/24/05 09:21:01 WORK ID: SAP# F05-023 SDG H3228

RCVD: 06/23/05 DUE: 08/07/05 KEEP: 08/07/06 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS				
01A-S	B1D7C9	SHAW	E329S	E331S	E333S	E335S	E342S

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
Alex Velez	6/29/05	SHAW LAB	6/29/05	D Husky/SHAW E+I	6/30/05

BC 0592

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F05-023-014	PAGE 1 OF 1

COLLECTOR: Pope/Prister/Mokler/Wels/Tyra	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: BN	AIR QUALITY: ☐	DATA TURNAROUND: 45 Days / 45 Days	
SAMPLING LOCATION: 216-A-8, I-3	PROJECT DESIGNATION: 216-A-8 Crib Characterization Borehole	SAF NO.: F05-023	
ICE CHEST NO.: GRP-03-009	FIELD LOGBOOK NO.: HNF-N-336-1	COA: 119152ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: Shaw Group	OFFSITE PROPERTY NO.: SU PTR 15772		BILL OF LADING/AIR BILL NO.: SU PTR 15772

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Rad futo B1D7D1

SPECIAL HANDLING AND/OR STORAGE: SDG # H3228

PRESERVATION	None	None
TYPE OF CONTAINER	Split Spoon Liner	Moisture Resistant Cont
NO. OF CONTAINER(S)	1	1
VOLUME	1500g	200g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS 2753g	Moisture Content - D2216;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B1D7C9	SOIL	6/14/05	1355	X	X

BC 0592

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JSPope/ASlar 6-14-05	1440	site RMA Fridge 6-14-05	1440
site RMA fridge 6-15-05	1300	G.S.Pope/ASlar 6-15-05	1300
JSPope/ASlar 6-15-05	1500	MW426/REF #3 6-15-05	1500
MD.Oc RT3 6/22/05	0435	MHBoucher/MGBoucher 6/22/05	0435
MHBoucher/MGBoucher 6/22/05	0435	FED EX	
FED EX	06/23/05	RFM	06/23/05 9:15
Flex Relinquished	6/29/05 16:00	FEDEX	6/29/05

SPECIAL INSTRUCTIONS

(1)Calcium Carbonate Content; Bulk Density - D2937; Particle Density - D854; Particle Size (Dry Sieve) - D422;

SDG # H3228

TO: SHAW LABORATORY

LABORATORY SECTION	RECEIVED BY: D Hanley SHAW EFI/GTOC	TITLE: SR. ENG. TECH.	DATE/TIME: 6/30/05 1000
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(03/03)

00000014