EBERLINE SERVICES

0061947

October 22, 2003

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

OCT 2003 RECEIVED

Reference: **P.O. #630**
Eberline Services R3-09-032-7580, SDG H2329

Dear Mr. Trent:

Enclosed is the data report for eleven soil samples designated under SAF No. F03-006 received at Eberline Services on September 8, 2003. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

RECEIVED
JUN 21 2004
EDMC

MCM

Enclosure: Data Package

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

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2329 was composed of eleven soil samples designated under SAF No. F03-006 with a Project Designation of: 200-PW-2/200-PW-4 OU – Borehole Soil Sampling.

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

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Iodine-129 Analyses

Sample B17HX6 had a yield of 17% (Lower Limit 20%). No other problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.12 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

10/22/3

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2329

SDG	7580
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2329

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	11
Lab Control Samples	13
Duplicates	14
Matrix Spikes	16
Data Sheets	17
Method Summaries	29
Report Guides	50
End of Section	64

Prepared by

Melin Mannion

Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	10/22/03

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.

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2329

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R309032-01	B17HR9	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-242	09/03/03 08:41
R309032-02	B17HT0	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-242	09/03/03 08:57
R309032-03	B17HT1	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-242	09/03/03 13:50
R309032-04	B17HX4	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-243	09/03/03 09:20
R309032-05	B17HX5	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-243	09/03/03 09:30
R309032-06	B17HX6	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-243	09/04/03 10:25
R309032-07	B17HX8	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-245	09/03/03 10:00
R309032-08	B17HX9	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-245	09/03/03 10:30
R309032-09	B17HY4	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-245	09/04/03 12:40
R309032-10	B17J02	200-PW-4/Retention Basin	SOLID		F03-006	F03-006-245	09/03/03 10:00
R309032-11	B173W6	216-A-36B - 318.5-321'	SOLID		F03-006	F03-006-206	08/28/03 12:10
R309032-12	Lab Control Sample		SOLID		F03-006		
R309032-13	Method Blank		SOLID		F03-006		
R309032-14	Duplicate (R309032-11)	216-A-36B - 318.5-321'	SOLID		F03-006		08/28/03 12:10
R309032-15	Spike (R309032-11)	216-A-36B - 318.5-321'	SOLID		F03-006		08/28/03 12:10

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/22/03

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SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2329

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
7580	F03-006-206	B173W6	SOLID	62.8	261.8 g		09/08/03	11	R309032-11	7580-011
	F03-006-242	B17HR9	SOLID	92.0	101.0 g		09/08/03	5	R309032-01	7580-001
		B17HT0	SOLID	91.3	108.3 g		09/08/03	5	R309032-02	7580-002
		B17HT1	SOLID	98.8	83.3 g		09/08/03	5	R309032-03	7580-003
	F03-006-243	B17HX4	SOLID	91.4	119.0 g		09/08/03	5	R309032-04	7580-004
		B17HX5	SOLID	92.4	107.8 g		09/08/03	5	R309032-05	7580-005
		B17HX6	SOLID	96.0	137.6 g		09/08/03	4	R309032-06	7580-006
	F03-006-245	B17HX8	SOLID	95.4	105.6 g		09/08/03	5	R309032-07	7580-007
		B17HX9	SOLID	89.1	68.3 g		09/08/03	5	R309032-08	7580-008
		B17HY4	SOLID	94.8	117.6 g		09/08/03	4	R309032-09	7580-009
		B17J02	SOLID	90.8	78.6 g		09/08/03	5	R309032-10	7580-010
		Method Blank	SOLID						R309032-13	7580-013
		Lab Control Sample	SOLID						R309032-12	7580-012
		Duplicate (R309032-11)	SOLID	62.8	261.8 g		09/08/03	11	R309032-14	7580-014
		Spike (R309032-11)	SOLID	62.9	261.8 g		09/08/03	11	R309032-15	7580-015

Lab id EBRLNE
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Version Ver 1.0
Form DVD-QS
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Report date 10/22/03

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SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2329

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7078-080	5.0	1			1	1	1/1		
NP	SOLID	Neptunium in Soil	7078-080	5.0	11			1	1	1/1		X
PU	SOLID	Plutonium, Isotopic in Solids	7078-080	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7078-080	5.0	11			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7078-080	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7078-080	10.0	11			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7078-080	10.0	11			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7078-080	15.0	1			1	1	1/1		
I	SOLID	Iodine 129 in Soil	7078-080	10.0	11			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Soil	7078-080	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7078-080	10.0	11			1	1	1/1		
H	SOLID	Tritium in Soil	7078-080	10.0	11			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7078-080	10.0	11			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2329

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	MATRIX SAF No	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309032-01	B17HR9		7580-001	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin	SOLID	7580-001	H		10/10/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-242	F03-006	7580-001	I		10/10/03	10/22/03	MWT	Iodine 129 in Soil
			7580-001	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
			7580-001	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
			7580-001	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
			7580-001	TC		10/18/03	10/22/03	MWT	Technetium 99 in Soil
			7580-001	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-02	B17HT0		7580-002	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin	SOLID	7580-002	H		10/10/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-242	F03-006	7580-002	I		10/13/03	10/22/03	MWT	Iodine 129 in Soil
			7580-002	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
			7580-002	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
			7580-002	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
			7580-002	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
			7580-002	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-03	B17HT1		7580-003	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin	SOLID	7580-003	H		10/10/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-242	F03-006	7580-003	I		10/13/03	10/22/03	MWT	Iodine 129 in Soil
			7580-003	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
			7580-003	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
			7580-003	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
			7580-003	TC		10/18/03	10/22/03	MWT	Technetium 99 in Soil
			7580-003	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-04	B17HX4		7580-004	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin	SOLID	7580-004	H		10/10/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-243	F03-006	7580-004	I		10/13/03	10/22/03	MWT	Iodine 129 in Soil
			7580-004	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
			7580-004	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
			7580-004	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
			7580-004	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
			7580-004	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2329

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309032-05	B17HX5			7580-005	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin		SOLID	7580-005	H		10/11/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-243	F03-006		7580-005	I		10/13/03	10/22/03	MWT	Iodine 129 in Soil
				7580-005	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
				7580-005	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-005	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-005	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-005	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-06	B17HX6			7580-006	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/04/03	200-PW-4/Retention Basin		SOLID	7580-006	H		10/11/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-243	F03-006		7580-006	I		10/14/03	10/22/03	MWT	Iodine 129 in Soil
				7580-006	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
				7580-006	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-006	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-006	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-006	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-07	B17HX8			7580-007	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin		SOLID	7580-007	H		10/11/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-245	F03-006		7580-007	I		10/14/03	10/22/03	MWT	Iodine 129 in Soil
				7580-007	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
				7580-007	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-007	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-007	TC		10/18/03	10/22/03	MWT	Technetium 99 in Soil
				7580-007	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-08	B17HX9			7580-008	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin		SOLID	7580-008	H		10/11/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-245	F03-006		7580-008	I		10/14/03	10/22/03	MWT	Iodine 129 in Soil
				7580-008	NI_L		10/09/03	10/22/03	MWT	Nickel 63 in Soil
				7580-008	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-008	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-008	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-008	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil

Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2329

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309032-09	B17HY4			7580-009	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/04/03	200-PW-4/Retention Basin		SOLID	7580-009	H		10/11/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-245	F03-006		7580-009	I		10/14/03	10/22/03	MWT	Iodine 129 in Soil
				7580-009	NI_L		10/09/03	10/22/03	MWT	Nickel 63 in Soil
				7580-009	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-009	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-009	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-009	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-10	B17J02			7580-010	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
09/03/03	200-PW-4/Retention Basin		SOLID	7580-010	H		10/11/03	10/22/03	MWT	Tritium in Soil
09/08/03	F03-006-245	F03-006		7580-010	I		10/15/03	10/22/03	MWT	Iodine 129 in Soil
				7580-010	NI_L		10/09/03	10/22/03	MWT	Nickel 63 in Soil
				7580-010	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-010	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-010	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-010	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
R309032-11	B173W6			7580-011	AM		10/07/03	10/22/03	MWT	Americium 241 in Soil
08/28/03	216-A-36B - 318.5-321'		SOLID	7580-011	C		10/05/03	10/22/03	MWT	Carbon 14 in Soil
09/08/03	F03-006-206	F03-006		7580-011	GAM		10/15/03	10/22/03	MWT	Gamma Scan
				7580-011	H		10/11/03	10/22/03	MWT	Tritium in Soil
				7580-011	I		10/15/03	10/22/03	MWT	Iodine 129 in Soil
				7580-011	NI_L		10/09/03	10/22/03	MWT	Nickel 63 in Soil
				7580-011	NP		10/08/03	10/22/03	MWT	Neptunium in Soil
				7580-011	PU		10/09/03	10/22/03	MWT	Plutonium, Isotopic in Solids
				7580-011	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-011	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-011	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
				7580-011	U		10/02/03	10/22/03	MWT	Uranium, Isotopic in Soil
				7580-011	U_T		10/17/03	10/22/03	MWT	Uranium, Total in Soil

Lab id EBRLNE
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SDG 7580
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2329

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309032-12	Lab Control Sample			7580-012	AM		10/07/03	10/22/03	MWT	Americium 241 in Soil
			SOLID	7580-012	C		10/05/03	10/22/03	MWT	Carbon 14 in Soil
		F03-006		7580-012	GAM		10/09/03	10/22/03	MWT	Gamma Scan
				7580-012	H		10/11/03	10/22/03	MWT	Tritium in Soil
				7580-012	I		10/10/03	10/22/03	MWT	Iodine 129 in Soil
				7580-012	NI_L		10/08/03	10/22/03	MWT	Nickel 63 in Soil
				7580-012	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-012	PU		10/08/03	10/22/03	MWT	Plutonium, Isotopic in Solids
				7580-012	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-012	TC		10/18/03	10/22/03	MWT	Technetium 99 in Soil
				7580-012	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
				7580-012	U		10/02/03	10/22/03	MWT	Uranium, Isotopic in Soil
				7580-012	U_T		10/17/03	10/22/03	MWT	Uranium, Total in Soil
R309032-13	Method Blank			7580-013	AM		10/07/03	10/22/03	MWT	Americium 241 in Soil
			SOLID	7580-013	C		10/04/03	10/22/03	MWT	Carbon 14 in Soil
		F03-006		7580-013	GAM		10/14/03	10/22/03	MWT	Gamma Scan
				7580-013	H		10/11/03	10/22/03	MWT	Tritium in Soil
				7580-013	I		10/15/03	10/22/03	MWT	Iodine 129 in Soil
				7580-013	NI_L		10/09/03	10/22/03	MWT	Nickel 63 in Soil
				7580-013	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-013	PU		10/08/03	10/22/03	MWT	Plutonium, Isotopic in Solids
				7580-013	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-013	TC		10/18/03	10/22/03	MWT	Technetium 99 in Soil
				7580-013	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
				7580-013	U		10/02/03	10/22/03	MWT	Uranium, Isotopic in Soil
				7580-013	U_T		10/17/03	10/22/03	MWT	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

SDG 7580
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2329

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R309032-14	Duplicate (R309032-11)			7580-014	AM		10/08/03	10/22/03	MWT	Americium 241 in Soil
08/28/03	216-A-36B - 318.5-321'		SOLID	7580-014	C		10/05/03	10/22/03	MWT	Carbon 14 in Soil
09/08/03		F03-006		7580-014	GAM		10/14/03	10/22/03	MWT	Gamma Scan
				7580-014	H		10/11/03	10/22/03	MWT	Tritium in Soil
				7580-014	I		10/15/03	10/22/03	MWT	Iodine 129 in Soil
				7580-014	NI_L		10/09/03	10/22/03	MWT	Nickel 63 in Soil
				7580-014	NP		10/04/03	10/22/03	MWT	Neptunium in Soil
				7580-014	PU		10/08/03	10/22/03	MWT	Plutonium, Isotopic in Solids
				7580-014	SR		10/07/03	10/22/03	MWT	Total Strontium in Soil
				7580-014	TC		10/20/03	10/22/03	MWT	Technetium 99 in Soil
				7580-014	TH		10/09/03	10/22/03	MWT	Thorium, Isotopic in Soil
				7580-014	U		10/02/03	10/22/03	MWT	Uranium, Isotopic in Soil
				7580-014	U_T		10/17/03	10/22/03	MWT	Uranium, Total in Soil
R309032-15	Spike (R309032-11)			7580-015	H		10/11/03	10/22/03	MWT	Tritium in Soil
08/28/03	216-A-36B - 318.5-321'		SOLID							
09/08/03		F03-006								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	F03-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
C	F03-006	Carbon 14 in Soil	C14_COX_LSC	11			1	1	1		14
GAM	F03-006	Gamma Scan	GAMMA_GS	1			1	1	1		4
H	F03-006	Tritium in Soil	906.0_H3_LSC	11			1	1	1	1	15
I	F03-006	Iodine 129 in Soil	I129_SEP_LEPS_GS	11			1	1	1		14
NI_L	F03-006	Nickel 63 in Soil	NI63_LSC	11			1	1	1		14
NP	F03-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	11			1	1	1		14
PU	F03-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
SR	F03-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	11			1	1	1		14
TC	F03-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	11			1	1	1		14
TH	F03-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	11			1	1	1		14
U	F03-006	Uranium, Isotopic in Soil	UISO_PLATE_AEA	1			1	1	1		4
U_T	F03-006	Uranium, Total in Soil	UTOT_KPA	1			1	1	1		4
TOTALS				93			13	13	13	1	133

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-013 Method Blank

METHOD BLANK

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-13	Client sample id	Method Blank
Dept sample id	7580-013	Material/Matrix	SOLID
		SAF No	F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.037	0.15	0.25	400	U	H
Carbon 14	14762-75-5	-1.47	3.2	5.5	50	U	C
Nickel 63	13981-37-8	-0.203	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	-0.020	0.13	0.28	1.0	U	SR
Technetium 99	14133-76-7	0.124	0.20	0.60	15	U	TC
Thorium 228	14274-82-9	0.048	0.097	0.37		U	TH
Thorium 230	14269-63-7	0.048	0.19	0.37	1.0	U	TH
Thorium 232	TH-232	0	0.096	0.37	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.001	0.003	0.007	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.063	0.24	1.0	U	U
Uranium 235	15117-96-1	0.038	0.077	0.29	1.0	U	U
Uranium 238	U-238	0	0.063	0.24	1.0	U	U
Neptunium 237	13994-20-2	-0.008	0.016	0.049	1.0	U	NP
Plutonium 238	13981-16-3	0	0.049	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.024	0.049	0.19	1.0	U	PU
Americium 241	14596-10-2	-0.037	0.074	0.28	1.0	U	AM
Iodine 129	15046-84-1	-0.162	0.84	1.9	2.0	U	I
Potassium 40	13966-00-2	U		1.0		U	GAM
Cobalt 60	10198-40-0	U		0.062	0.050	U	GAM
Tin 126	15832-50-5	U		0.079		U	GAM
Cesium 134	13967-70-9	U		0.075		U	GAM
Cesium 137	10045-97-3	U		0.063	0.10	U	GAM
Radium 226	13982-63-3	U		0.11		U	GAM
Radium 228	15262-20-1	U		0.28		U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	U		0.077		U	GAM
Thorium 232	TH-232	U		0.28		U	GAM

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-013 Method Blank

BLANK, cont.

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-13	Client sample id	Method Blank
Dept sample id	7580-013	Material/Matrix	SOLID
		SAF No	F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		7.2		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

200-PW-2/200-PW-4 OU-Borehole Soil

QC-BLANK 45668

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-012

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7580
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2329
Contract No. 630

Lab sample id R309032-12
Dept sample id 7580-012

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No F03-006

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	13.2	0.39	0.25	400		H	13.6	0.54	97	84-116	80-120
Carbon 14	2920	59	16	50		C	3190	130	92	85-115	80-120
Nickel 63	259	5.5	2.7	30		NI_L	274	11	95	84-116	80-120
Total Strontium	21.4	0.88	0.29	1.0		SR	21.9	0.88	98	83-117	80-120
Technetium 99	123	3.2	0.60	15		TC	120	4.8	102	83-117	80-120
Thorium 230	41.8	4.2	0.29	1.0		TH	44.8	1.8	93	83-117	80-120
Total Uranium (ug/g)	19.8	2.3	0.070	1.0		U_T	18.1	0.72	109	75-125	80-120
Uranium 233/234	17.6	2.1	0.99	1.0		U	19.3	0.77	91	81-119	80-120
Uranium 235	14.6	1.9	0.26	1.0		U	15.7	0.63	93	80-120	80-120
Uranium 238	20.7	2.3	0.95	1.0		U	21.0	0.84	99	81-119	80-120
Neptunium 237	22.9	0.10	0.058	1.0	X	NP	21.8	0.87	105	90-110	80-120
Plutonium 238	25.0	2.2	0.16	1.0		PU	26.8	1.1	93	85-115	80-120
Plutonium 239/240	26.2	2.3	0.16	1.0		PU	29.0	1.2	90	85-115	80-120
Americium 241	18.9	2.2	0.27	1.0		AM	21.0	0.84	90	82-118	80-120
Iodine 129	135	4.2	7.2	2.0		I	127	5.1	106	82-118	80-120
Cobalt 60	3.39	0.12	0.055	0.050		GAM	3.16	0.13	107	74-126	80-120
Cesium 137	3.75	0.11	0.067	0.10		GAM	3.21	0.13	117	73-127	80-120

200-PW-2/200-PW-4 OU-Borehole Soil

QC-LCS 45667

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-014

B173W6

DUPLICATE

SDG	7580			Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R309032-14	Lab sample id	R309032-11	Client sample id	B173W6
Dept sample id	7580-014	Dept sample id	7580-011	Location/Matrix	216-A-36B - 318.5-321' SOLID
		Received	09/08/03	Collected/Weight	08/28/03 12:10 261.8 g
% solids	62.8	% solids	62.8	Custody/SAF No	F03-006-206 F03-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	20.0	0.47	0.25	400		H	21.8	0.50	0.26		9	22
Carbon 14	-1.81	1.9	3.3	50	U	C	-0.294	1.8	3.1	U	-	
Nickel 63	-1.15	1.4	2.5	30	U	NI_L	-0.612	1.4	2.4	U	-	
Total Strontium	0.241	0.13	0.22	1.0		SR	0.216	0.13	0.22	U	11	123
Technetium 99	-0.066	0.16	0.57	15	U	TC	-0.044	0.18	0.60	U	-	
Thorium 228	0.235	0.20	0.26		U	TH	0.464	0.34	0.32		66	170
Thorium 230	0.503	0.27	0.26	1.0		TH	0.589	0.34	0.32		16	120
Thorium 232	0.369	0.20	0.26	1.0		TH	0.505	0.26	0.32		31	113
Total Uranium (ug/g)	0.430	0.051	0.007	1.0		U_T	0.430	0.043	0.007		0	30
Uranium 233/234	0.318	0.16	0.20	1.0		U	0.356	0.22	0.21		11	122
Uranium 235	0	0.064	0.24	1.0	U	U	0.033	0.066	0.25	U	-	
Uranium 238	0.265	0.16	0.20	1.0		U	0.411	0.22	0.21		43	121
Neptunium 237	0	0.022	0.058	1.0	U	NP	0.026	0.052	0.078	U	-	
Plutonium 238	0	0.048	0.18	1.0	U	PU	-0.023	0.045	0.17	U	-	
Plutonium 239/240	0	0.048	0.18	1.0	U	PU	0.022	0.045	0.17	U	-	
Americium 241	-0.043	0.044	0.17	1.0	U	AM	0.158	0.16	0.30	U	-	
Iodine 129	-1.68	3.3	7.6	2.0	U	I	-1.17	3.4	7.9	U	-	
Potassium 40	16.7	1.5	0.87			GAM	14.8	3.8	0.88		12	50
Cobalt 60	U		0.082	0.050	U	GAM	U		0.083	U	-	
Tin 126	U		0.10		U	GAM	U		0.53	U	-	
Cesium 134	U		0.095		U	GAM	U		0.11	U	-	
Cesium 137	U		0.072	0.10	U	GAM	U		0.078	U	-	
Radium 226	0.450	0.13	0.14			GAM	0.378	0.17	0.15		17	84
Radium 228	0.390	0.29	0.33			GAM	0.775	0.41	0.37		66	134
Europium 152	U		0.17	0.10	U	GAM	U		0.20	U	-	
Europium 154	U		0.26	0.10	U	GAM	U		0.26	U	-	
Europium 155	U		0.15	0.10	U	GAM	U		0.14	U	-	
Thorium 228	0.581	0.078	0.075			GAM	0.544	0.15	0.11		7	55

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/22/03

DUPLICATE, cont.

SDG	7580			Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R309032-14	Lab sample id	R309032-11	Client sample id	B173W6
Dept sample id	7580-014	Dept sample id	7580-011	Location/Matrix	216-A-36B - 318.5-321' SOLID
		Received	09/08/03	Collected/Weight	08/28/03 12:10 261.8 g
% solids	62.8	% solids	62.8	Custody/SAF No	F03-006-206 F03-006

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
Thorium 232	0.390	0.29	0.33			GAM	0.775	0.41	0.37		66	134	
Uranium 235	U		0.25		U	GAM	U		0.26	U	-		
Uranium 238	U		7.4		U	GAM	U		10	U	-		
Americium 241	U		0.18		U	GAM	U		0.072	U	-		

200-PW-2/200-PW-4 OU-Borehole Soil

QC-DUP#11 45669

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-015 B173W6

MATRIX SPIKE

SDG	7580			Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R309032-15	Lab sample id	R309032-11	Client sample id	B173W6
Dept sample id	7580-015	Dept sample id	7580-011	Location/Matrix	216-A-36B - 318.5-321' SOLID
		Received	09/08/03	Collected/Weight	08/28/03 12:10 261.8 g
% solids	62.9	% solids	62.8	Custody/SAF No	F03-006-206 F03-006

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	66.6	0.80	0.23	400	X	H	53.7	2.1	21.8	0.50	83	79-121	60-140

200-PW-2/200-PW-4 OU-Borehole Soil

QC-MS#11 45670

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-001 B17HR9

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-01	Client sample id	B17HR9
Dept sample id	7580-001	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 08:41 101.0 g
% solids	92.0	Custody/SAF No	F03-006-242 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.385	0.17	0.27	400		H
Carbon 14	14762-75-5	-1.06	2.2	3.8	50	U	C
Nickel 63	13981-37-8	-0.379	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.676	0.17	0.22	1.0		SR
Technetium 99	14133-76-7	0.123	0.18	0.44	15	U	TC
Thorium 228	14274-82-9	0.535	0.26	0.24			TH
Thorium 230	14269-63-7	0.252	0.19	0.24	1.0		TH
Thorium 232	TH-232	0.535	0.25	0.24	1.0		TH
Neptunium 237	13994-20-2	0	0.019	0.044	1.0	U	NP
Iodine 129	15046-84-1	-5.00	3.7	8.6	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-002 B17HT0

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-02	Client sample id	B17HT0
Dept sample id	7580-002	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 08:57 108.3 g
% solids	91.3	Custody/SAF No	F03-006-242 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.820	0.17	0.25	400		H
Carbon 14	14762-75-5	-0.480	2.1	3.6	50	U	C
Nickel 63	13981-37-8	-0.667	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.446	0.15	0.22	1.0		SR
Technetium 99	14133-76-7	0.093	0.19	0.58	15	U	TC
Thorium 228	14274-82-9	0.479	0.26	0.24			TH
Thorium 230	14269-63-7	0.510	0.26	0.24	1.0		TH
Thorium 232	TH-232	0.702	0.32	0.24	1.0		TH
Neptunium 237	13994-20-2	0.005	0.039	0.070	1.0	U	NP
Iodine 129	15046-84-1	-0.290	1.6	3.6	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-003 B17HT1

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-03	Client sample id	B17HT1
Dept sample id	7580-003	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 13:50 83.3 g
% solids	98.8	Custody/SAF No	F03-006-242 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.015	0.15	0.26	400	U	H
Carbon 14	14762-75-5	-0.627	1.5	2.5	50	U	C
Nickel 63	13981-37-8	-0.640	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.046	0.13	0.25	1.0	U	SR
Technetium 99	14133-76-7	0.095	0.18	0.56	15	U	TC
Thorium 228	14274-82-9	0.120	0.12	0.23		U	TH
Thorium 230	14269-63-7	0.360	0.24	0.23	1.0		TH
Thorium 232	TH-232	0.180	0.12	0.23	1.0	U	TH
Neptunium 237	13994-20-2	-0.026	0.021	0.069	1.0	U	NP
Iodine 129	15046-84-1	-1.68	2.9	6.7	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-004 B17HX4

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-04	Client sample id	B17HX4
Dept sample id	7580-004	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 09:20 119.0 g
% solids	91.4	Custody/SAF No	F03-006-243 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	6.24	0.30	0.26	400		H
Carbon 14	14762-75-5	-0.272	2.1	3.6	50	U	C
Nickel 63	13981-37-8	-0.866	1.4	2.5	30	U	NI_L
Total Strontium	SR-RAD	1.40	0.23	0.23	1.0		SR
Technetium 99	14133-76-7	0.050	0.17	0.56	15	U	TC
Thorium 228	14274-82-9	0.344	0.21	0.26			TH
Thorium 230	14269-63-7	0.447	0.28	0.26	1.0		TH
Thorium 232	TH-232	0.722	0.35	0.26	1.0		TH
Neptunium 237	13994-20-2	-0.020	0.029	0.071	1.0	U	NP
Iodine 129	15046-84-1	-2.77	2.2	5.1	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-005 B17HX5

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-05	Client sample id	B17HX5
Dept sample id	7580-005	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 09:30 107.8 g
% solids	92.4	Custody/SAF No	F03-006-243 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	12.4	0.39	0.25	400		H
Carbon 14	14762-75-5	-0.214	2.0	3.4	50	U	C
Nickel 63	13981-37-8	-0.817	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	1.34	0.22	0.21	1.0		SR
Technetium 99	14133-76-7	0	0.21	0.60	15	U	TC
Thorium 228	14274-82-9	0.705	0.48	0.45			TH
Thorium 230	14269-63-7	0.528	0.36	0.45	1.0		TH
Thorium 232	TH-232	0.528	0.36	0.45	1.0		TH
Neptunium 237	13994-20-2	0.074	0.074	0.11	1.0	U	NP
Iodine 129	15046-84-1	-3.74	5.1	12	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-006 B17HX6

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-06	Client sample id	B17HX6
Dept sample id	7580-006	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/04/03 10:25 137.6 g
% solids	96.0	Custody/SAF No	F03-006-243 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	5.68	0.28	0.25	400		H
Carbon 14	14762-75-5	0.144	1.5	2.5	50	U	C
Nickel 63	13981-37-8	-1.92	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.007	0.13	0.27	1.0	U	SR
Technetium 99	14133-76-7	0.024	0.21	0.56	15	U	TC
Thorium 228	14274-82-9	0.332	0.24	0.23			TH
Thorium 230	14269-63-7	0.512	0.24	0.23	1.0		TH
Thorium 232	TH-232	0.331	0.18	0.23	1.0		TH
Neptunium 237	13994-20-2	-0.037	0.075	0.29	1.0	U	NP
Iodine 129	15046-84-1	0.470	2.0	4.6	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-007 B17HX8

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-07	Client sample id	B17HX8
Dept sample id	7580-007	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 10:00 105.6 g
% solids	95.4	Custody/SAF No	F03-006-245 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.295	0.16	0.25	400		H
Carbon 14	14762-75-5	1.22	2.3	3.7	50	U	C
Nickel 63	13981-37-8	-0.805	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	1.22	0.21	0.22	1.0		SR
Technetium 99	14133-76-7	0.049	0.18	0.57	15	U	TC
Thorium 228	14274-82-9	0.714	0.29	0.22			TH
Thorium 230	14269-63-7	1.26	0.41	0.22	1.0		TH
Thorium 232	TH-232	0.514	0.23	0.22	1.0		TH
Neptunium 237	13994-20-2	-0.012	0.025	0.076	1.0	U	NP
Iodine 129	15046-84-1	-0.998	3.4	7.8	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-008 B17HX9

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-08	Client sample id	B17HX9
Dept sample id	7580-008	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 10:30 68.3 g
% solids	89.1	Custody/SAF No	F03-006-245 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.156	0.15	0.25	400	U	H
Carbon 14	14762-75-5	-0.296	2.1	3.6	50	U	C
Nickel 63	13981-37-8	-0.758	1.6	2.8	30	U	NI_L
Total Strontium	SR-RAD	1.18	0.21	0.21	1.0		SR
Technetium 99	14133-76-7	0.083	0.17	0.54	15	U	TC
Thorium 228	14274-82-9	0.681	0.31	0.24			TH
Thorium 230	14269-63-7	0.773	0.31	0.24	1.0		TH
Thorium 232	TH-232	0.371	0.19	0.24	1.0		TH
Neptunium 237	13994-20-2	-0.016	0.021	0.045	1.0	U	NP
Iodine 129	15046-84-1	0.513	1.0	2.4	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-009 B17HY4

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-09	Client sample id	B17HY4
Dept sample id	7580-009	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/04/03 12:40 117.6 g
% solids	94.8	Custody/SAF No	F03-006-245 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	16.6	0.44	0.26	400		H
Carbon 14	14762-75-5	0.746	2.1	3.5	50	U	C
Nickel 63	13981-37-8	-0.407	1.5	2.5	30	U	NI_L
Total Strontium	SR-RAD	0.067	0.14	0.26	1.0	U	SR
Technetium 99	14133-76-7	0.124	0.20	0.61	15	U	TC
Thorium 228	14274-82-9	0.491	0.25	0.23			TH
Thorium 230	14269-63-7	0.429	0.25	0.23	1.0		TH
Thorium 232	TH-232	0.521	0.25	0.23	1.0		TH
Neptunium 237	13994-20-2	0.043	0.043	0.059	1.0	U	NP
Iodine 129	15046-84-1	-3.60	4.6	11	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-010 B17J02

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-10	Client sample id	B17J02
Dept sample id	7580-010	Location/Matrix	200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 10:00 78.6 g
% solids	90.8	Custody/SAF No	F03-006-245 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.205	0.15	0.25	400	U	H
Carbon 14	14762-75-5	-0.238	2.2	3.7	50	U	C
Nickel 63	13981-37-8	-1.06	1.5	2.5	30	U	NI_L
Total Strontium	SR-RAD	0.969	0.19	0.21	1.0		SR
Technetium 99	14133-76-7	0.101	0.19	0.58	15	U	TC
Thorium 228	14274-82-9	0.410	0.28	0.26			TH
Thorium 230	14269-63-7	0.511	0.28	0.26	1.0		TH
Thorium 232	TH-232	0.580	0.28	0.26	1.0		TH
Neptunium 237	13994-20-2	-0.005	0.021	0.058	1.0	U	NP
Iodine 129	15046-84-1	-0.850	1.3	3.0	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-011 B173W6

DATA SHEET

SDG	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-11	Client sample id	B173W6
Dept sample id	7580-011	Location/Matrix	216-A-36B - 318.5-321' SOLID
Received	09/08/03	Collected/Weight	08/28/03 12:10 261.8 g
% solids	62.8	Custody/SAF No	F03-006-206 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	21.8	0.50	0.26	400		H
Carbon 14	14762-75-5	-0.294	1.8	3.1	50	U	C
Nickel 63	13981-37-8	-0.612	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	0.216	0.13	0.22	1.0	U	SR
Technetium 99	14133-76-7	-0.044	0.18	0.60	15	U	TC
Thorium 228	14274-82-9	0.464	0.34	0.32			TH
Thorium 230	14269-63-7	0.589	0.34	0.32	1.0		TH
Thorium 232	TH-232	0.505	0.26	0.32	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.430	0.043	0.007	1.0		U_T
Uranium 233/234	U-233/234	0.356	0.22	0.21	1.0		U
Uranium 235	15117-96-1	0.033	0.066	0.25	1.0	U	U
Uranium 238	U-238	0.411	0.22	0.21	1.0		U
Neptunium 237	13994-20-2	0.026	0.052	0.078	1.0	U	NP
Plutonium 238	13981-16-3	-0.023	0.045	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	0.022	0.045	0.17	1.0	U	PU
Americium 241	14596-10-2	0.158	0.16	0.30	1.0	U	AM
Iodine 129	15046-84-1	-1.17	3.4	7.9	2.0	U	I
Potassium 40	13966-00-2	14.8	3.8	0.88			GAM
Cobalt 60	10198-40-0	U		0.083	0.050	U	GAM
Tin 126	15832-50-5	U		0.53		U	GAM
Cesium 134	13967-70-9	U		0.11		U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.378	0.17	0.15			GAM
Radium 228	15262-20-1	0.775	0.41	0.37			GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.544	0.15	0.11			GAM

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

7580-011 B173W6

DATA SHEET, cont

SDG	7580	Client/Case no	Hanford	SDG H2329	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R309032-11	Client sample id	B173W6		
Dept sample id	7580-011	Location/Matrix	216-A-36B - 318.5-321'	SOLID	
Received	09/08/03	Collected/Weight	08/28/03 12:10	261.8 g	
% solids	62.8	Custody/SAF No	F03-006-206	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	TH-232	0.775	0.41	0.37			GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		10		U	GAM
Americium 241	14596-10-2	U		0.072		U	GAM

200-PW-2/200-PW-4 OU-Borehole Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test AM Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241	
Preparation batch 7078-080						
R309032-11			7580-011	B173W6	U	
R309032-12			7580-012	LCS (QC ID=45667)	ok	
R309032-13			7580-013	BLK (QC ID=45668)	U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U
Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 5.0 % Reference Lab Notebook 7078 pg. 080													
R309032-11			B173W6	0.30	0.500			64		104			40	10/07/03	10/07	SS-035
R309032-12			LCS (QC ID=45667)	0.27	0.500			72		105				10/07/03	10/07	SS-036
R309032-13			BLK (QC ID=45668)	0.28	0.500			77		106				10/07/03	10/07	SS-040
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.17	0.500			76		161			41	10/07/03	10/08	SS-035
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.26	±	0.12
	YIELD	72	±	12

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test NP Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Neptunium 237	
Preparation batch 7078-080						
R309032-01			7580-001	B17HR9	U	
R309032-02			7580-002	B17HT0	U	
R309032-03			7580-003	B17HT1	U	
R309032-04			7580-004	B17HX4	U	
R309032-05			7580-005	B17HX5	U	
R309032-06			7580-006	B17HX6	U	
R309032-07			7580-007	B17HX8	U	
R309032-08			7580-008	B17HX9	U	
R309032-09			7580-009	B17HY4	U	
R309032-10			7580-010	B17J02	U	
R309032-11			7580-011	B173W6	U	
R309032-12			7580-012	LCS (QC ID=45667)	ok	X
R309032-13			7580-013	BLK (QC ID=45668)	U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil — RDLs (pCi/g) 1.0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test NP Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 5.0 %		Reference Lab Notebook 7078 pg. 080											
R309032-01			B17HR9	0.044	0.500			53		1005			31	10/03/03	10/04	SS-028
R309032-02			B17HT0	0.070	0.500			54		1005			31	10/03/03	10/04	SS-031
R309032-03			B17HT1	0.069	0.500			49		1005			31	10/03/03	10/04	SS-032
R309032-04			B17HX4	0.071	0.500			55		1004			31	10/03/03	10/04	SS-035
R309032-05			B17HX5	0.11	0.500			56		118			31	10/03/03	10/04	SS-028
R309032-06			B17HX6	0.29	0.500			57		119			30	10/03/03	10/04	SS-032
R309032-07			B17HX8	0.076	0.500			41		1004			31	10/03/03	10/04	SS-055
R309032-08			B17HX9	0.045	0.500			48		1004			31	10/03/03	10/04	SS-056
R309032-09			B17HY4	0.059	0.500			50		1004			30	10/03/03	10/04	SS-057
R309032-10			B17J02	0.058	0.500			52		1004			31	10/03/03	10/04	SS-058
R309032-11			B173W6	0.078	0.500			47		203			41	10/03/03	10/08	SS-028
R309032-12			LCS (QC ID=45667)	0.058	0.500			52		986				10/03/03	10/04	SS-060
R309032-13			BLK (QC ID=45668)	0.049	0.500			66		986				10/03/03	10/04	SS-061
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.058	0.500			56		987			37	10/03/03	10/04	SS-062
Nominal values and limits from method				1.0	0.500			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-061	Determination of Moisture Content in Solid Samples rev 1
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 0

AVERAGES ± 2 SD FOR 14 SAMPLES				
	MDA	0.081	±	0.12
	YIELD	53	±	12

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test PU Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240	
Preparation batch 7078-080								
R309032-11			7580-011	B173W6	U		U	
R309032-12			7580-012	LCS (QC ID=45667)	ok		ok	
R309032-13			7580-013	BLK (QC ID=45668)	U		U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U	-	U
Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 5.0 %	Reference Lab Notebook 7078 pg. 080												
R309032-11			B173W6	0.17	0.500			72		156			42	10/08/03	10/09	SS-060
R309032-12			LCS (QC ID=45667)	0.16	0.500			75		167				10/08/03	10/08	SS-059
R309032-13			BLK (QC ID=45668)	0.19	0.500			65		168				10/08/03	10/08	SS-061
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.18	0.500			64		168			41	10/08/03	10/08	SS-062
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.18	±	0.026
	YIELD	69	±	11

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test TH Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 7078-080					
R309032-01			7580-001	B17HR9	0.252
R309032-02			7580-002	B17HT0	0.510
R309032-03			7580-003	B17HT1	0.360
R309032-04			7580-004	B17HX4	0.447
R309032-05			7580-005	B17HX5	0.528
R309032-06			7580-006	B17HX6	0.512
R309032-07			7580-007	B17HX8	1.26
R309032-08			7580-008	B17HX9	0.773
R309032-09			7580-009	B17HY4	0.429
R309032-10			7580-010	B17J02	0.511
R309032-11			7580-011	B173W6	0.589
R309032-12			7580-012	LCS (QC ID=45667)	ok
R309032-13			7580-013	BLK (QC ID=45668)	U
R309032-14			7580-014	Duplicate (R309032-11)	ok

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil — RDLs (pCi/g) 1.0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test TH Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 5.0 %		Reference Lab Notebook 7078 pg. 080											
R309032-01			B17HR9	0.24	0.250			87		192			36	10/09/03	10/09	SS-031
R309032-02			B17HT0	0.24	0.250			86		192			36	10/09/03	10/09	SS-035
R309032-03			B17HT1	0.23	0.250			92		192			36	10/09/03	10/09	SS-036
R309032-04			B17HX4	0.26	0.250			90		193			36	10/09/03	10/09	SS-040
R309032-05			B17HX5	0.45	0.250			46		193			36	10/09/03	10/09	SS-042
R309032-06			B17HX6	0.23	0.250			91		193			35	10/09/03	10/09	SS-059
R309032-07			B17HX8	0.22	0.250			92		193			36	10/09/03	10/09	SS-060
R309032-08			B17HX9	0.24	0.250			88		193			36	10/09/03	10/09	SS-061
R309032-09			B17HY4	0.23	0.250			88		193			35	10/09/03	10/09	SS-062
R309032-10			B17J02	0.26	0.250			93		156			36	10/09/03	10/09	SS-028
R309032-11			B173W6	0.32	0.250			81		154			42	10/09/03	10/09	SS-035
R309032-12			LCS (QC ID=45667)	0.29	0.250			92		154				10/09/03	10/09	SS-036
R309032-13			BLK (QC ID=45668)	0.37	0.250			79		156				10/09/03	10/09	SS-040
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.26	0.250			101		156			42	10/09/03	10/09	SS-059
Nominal values and limits from method				1.0	0.250			20-105		150			180			

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

AVERAGES ± 2 SD FOR 14 SAMPLES				
MDA	0.27	±	0.13
YIELD	86	±	25

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test U Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7078-080											
R309032-11			7580-011	B173W6	0.356	U	0.411	87	71	8	17
R309032-12			7580-012	LCS (QC ID=45667)	ok	ok	ok				
R309032-13			7580-013	BLK (QC ID=45668)	U	U	U				
R309032-14			7580-014	Duplicate (R309032-11)	ok	- U	ok	120	94	0	24
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-PW-2/200-PW-4 OU-Borehole Soil								Averages 103		4	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 5.0 %	Reference Lab Notebook 7078 pg. 080												
R309032-11			B173W6	0.25	0.500			89		105			35	10/02/03	10/02	SS-056
R309032-12			LCS (QC ID=45667)	0.99	0.500			90		105				10/02/03	10/02	SS-057
R309032-13			BLK (QC ID=45668)	0.29	0.500			82		105				10/02/03	10/02	SS-058
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.24	0.500			93		105			35	10/02/03	10/02	SS-041
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.44	±	0.73
	YIELD	88	±	9

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test SR Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7078-080					
R309032-01			7580-001	B17HR9	0.676
R309032-02			7580-002	B17HT0	0.446
R309032-03			7580-003	B17HT1	U
R309032-04			7580-004	B17HX4	1.40
R309032-05			7580-005	B17HX5	1.34
R309032-06			7580-006	B17HX6	U
R309032-07			7580-007	B17HX8	1.22
R309032-08			7580-008	B17HX9	1.18
R309032-09			7580-009	B17HY4	U
R309032-10			7580-010	B17J02	0.969
R309032-11			7580-011	B173W6	U
R309032-12			7580-012	LCS (QC ID=45667)	ok
R309032-13			7580-013	BLK (QC ID=45668)	U
R309032-14			7580-014	Duplicate (R309032-11)	ok

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil — RDLs (pCi/g) 1.0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test SR Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 080													
R309032-01			B17HR9	0.22	1.00			100		100			34	10/07/03	10/07	GRB-217
R309032-02			B17HT0	0.22	1.00			99		100			34	10/07/03	10/07	GRB-218
R309032-03			B17HT1	0.25	1.00			100		100			34	10/07/03	10/07	GRB-201
R309032-04			B17HX4	0.23	1.00			99		100			34	10/07/03	10/07	GRB-219
R309032-05			B17HX5	0.21	1.00			100		100			34	10/07/03	10/07	GRB-220
R309032-06			B17HX6	0.27	1.00			100		100			33	10/07/03	10/07	GRB-208
R309032-07			B17HX8	0.22	1.00			100		100			34	10/07/03	10/07	GRB-221
R309032-08			B17HX9	0.21	1.00			99		100			34	10/07/03	10/07	GRB-222
R309032-09			B17HY4	0.26	1.00			97		100			33	10/07/03	10/07	GRB-219
R309032-10			B17J02	0.21	1.00			98		100			34	10/07/03	10/07	GRB-230
R309032-11			B173W6	0.22	1.00			100		100			40	10/07/03	10/07	GRB-224
R309032-12			LCS (QC ID=45667)	0.29	1.00			78		100				10/07/03	10/07	GRB-229
R309032-13			BLK (QC ID=45668)	0.28	1.00			86		100				10/07/03	10/07	GRB-230
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.22	1.00			99		100			40	10/07/03	10/07	GRB-230
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 14 SAMPLES				
	MDA	0.24	±	0.056
	YIELD	97	±	13

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test TC Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99	
Preparation batch 7078-080						
R309032-01			7580-001	B17HR9	U	
R309032-02			7580-002	B17HT0	U	
R309032-03			7580-003	B17HT1	U	
R309032-04			7580-004	B17HX4	U	
R309032-05			7580-005	B17HX5	U	
R309032-06			7580-006	B17HX6	U	
R309032-07			7580-007	B17HX8	U	
R309032-08			7580-008	B17HX9	U	
R309032-09			7580-009	B17HY4	U	
R309032-10			7580-010	B17J02	U	
R309032-11			7580-011	B173W6	U	
R309032-12			7580-012	LCS (QC ID=45667)	ok	
R309032-13			7580-013	BLK (QC ID=45668)	U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil — RDLs (pCi/g) 15

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test TC Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 080													
R309032-01			B17HR9	0.44	1.01			88		100			45	10/15/03	10/18	GRB-208
R309032-02			B17HT0	0.58	1.00			87		50			47	10/15/03	10/20	GRB-220
R309032-03			B17HT1	0.56	1.01			90		50			45	10/15/03	10/18	GRB-222
R309032-04			B17HX4	0.56	1.02			89		50			47	10/15/03	10/20	GRB-222
R309032-05			B17HX5	0.60	1.02			86		50			47	10/15/03	10/20	GRB-224
R309032-06			B17HX6	0.56	1.02			88		50			46	10/15/03	10/20	GRB-220
R309032-07			B17HX8	0.57	1.01			92		50			45	10/15/03	10/18	GRB-202
R309032-08			B17HX9	0.54	1.02			92		50			47	10/15/03	10/20	GRB-222
R309032-09			B17HY4	0.61	1.02			86		50			46	10/15/03	10/20	GRB-224
R309032-10			B17J02	0.58	1.02			88		50			47	10/15/03	10/20	GRB-230
R309032-11			B173W6	0.60	1.01			87		50			53	10/15/03	10/20	GRB-232
R309032-12			LCS (QC ID=45667)	0.60	1.00			93		50				10/15/03	10/18	GRB-229
R309032-13			BLK (QC ID=45668)	0.60	1.00			88		50				10/15/03	10/18	GRB-230
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.57	1.01			91		50			53	10/15/03	10/20	GRB-202
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 2
	CP-003	Addition of Carriers and Tracers, rev 5
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 0

AVERAGES ± 2 SD FOR 14 SAMPLES				
	MDA	0.57	±	0.085
	YIELD	89	±	5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test GAM Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
Preparation batch 7078-080								
R309032-11			7580-011	B173W6	U		U	
R309032-12			7580-012	LCS (QC ID=45667)	ok		ok	
R309032-13			7580-013	BLK (QC ID=45668)	U		U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U	-	U
Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil				RDLs (pCi/g)	0.050		0.10	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 15.0 % Reference Lab Notebook 7078 pg. 080													
R309032-11			B173W6	0.75	78.8					413			48	09/18/03	10/15	PD,07,00
R309032-12			LCS (QC ID=45667)	0.055	78.8					542				09/18/03	10/09	PD,04,00
R309032-13			BLK (QC ID=45668)	0.49	78.8					413				09/18/03	10/14	PD,03,00
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.67	78.8					525			47	09/18/03	10/14	PD,03,00
Nominal values and limits from method				0.050	78.8					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.49 ± 0.62
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test I Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129	
Preparation batch 7078-080						
R309032-01			7580-001	B17HR9	U	
R309032-02			7580-002	B17HT0	U	
R309032-03			7580-003	B17HT1	U	
R309032-04			7580-004	B17HX4	U	
R309032-05			7580-005	B17HX5	U	
R309032-06			7580-006	B17HX6	U	
R309032-07			7580-007	B17HX8	U	
R309032-08			7580-008	B17HX9	U	
R309032-09			7580-009	B17HY4	U	
R309032-10			7580-010	B17J02	U	
R309032-11			7580-011	B173W6	U	
R309032-12			7580-012	LCS (QC ID=45667)	ok	
R309032-13			7580-013	BLK (QC ID=45668)	U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U

Nominal values and limits from method RDLs (pCi/g) 2.0
200-PW-2/200-PW-4 OU-Borehole Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test I Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 080													
R309032-01			B17HR9	8.6	1.00			26		1025			37	10/10/03	10/10	XSPEC-016
R309032-02			B17HT0	3.6	1.00			21		614			40	10/10/03	10/13	XSPEC-004
R309032-03			B17HT1	6.7	1.00			36		615			40	10/10/03	10/13	XSPEC-016
R309032-04			B17HX4	5.1	1.00			22		565			40	10/10/03	10/13	XSPEC-004
R309032-05			B17HX5	12	1.00			20		564			40	10/10/03	10/13	XSPEC-016
R309032-06			B17HX6	4.6	1.01			17		611			40	10/10/03	10/14	XSPEC-004
R309032-07			B17HX8	7.8	1.00			30		611			41	10/10/03	10/14	XSPEC-016
R309032-08			B17HX9	2.4	1.01			28		848			41	10/10/03	10/14	XSPEC-004
R309032-09			B17HY4	11	1.01			21		847			40	10/10/03	10/14	XSPEC-016
R309032-10			B17J02	3.0	1.02			30		629			42	10/10/03	10/15	XSPEC-004
R309032-11			B173W6	7.9	1.01			30		629			48	10/10/03	10/15	XSPEC-016
R309032-12			LCS (QC ID=45667)	7.2	1.00			41		343				10/10/03	10/10	XSPEC-016
R309032-13			BLK (QC ID=45668)	1.9	1.00			37		816				10/10/03	10/15	XSPEC-004
R309032-14			Duplicate (R309032-11) (QC ID=45669)	7.6	1.01			30		816			48	10/10/03	10/15	XSPEC-016
Nominal values and limits from method				2.0	1.00			20-105		300			180			

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	CP-024	Iodine-129, Sample Dissolution, rev 3
	CP-530	Iodine-129 Purification, rev 0

AVERAGES ± 2 SD FOR 14 SAMPLES				
	MDA	6.4	±	6.2
	YIELD	28	±	14

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test U T Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Uranium
Preparation batch 7078-080					
R309032-11			7580-011	B173W6	0.430
R309032-12			7580-012	LCS (QC ID=45667)	ok
R309032-13			7580-013	BLK (QC ID=45667)	U
R309032-14			7580-014	Duplicate (R309032-11)	ok
Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil				RDLs (ug/g)	1.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 9.0 % Reference Lab Notebook 7078 pg. 080													
R309032-11			B173W6	0.007	0.100								50	10/17/03	10/17	KPA-001
R309032-12			LCS (QC ID=45667)	0.070	0.100									10/17/03	10/17	KPA-001
R309032-13			BLK (QC ID=45667)	0.007	0.100									10/17/03	10/17	KPA-001
R309032-14			Duplicate (R309032-11) (QC ID=45667)	0.007	0.100								50	10/17/03	10/17	KPA-001
Nominal values and limits from method				1.0	0.100								180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.023 ± 0.063
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test C Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 7078-080						
R309032-01			7580-001	B17HR9	U	
R309032-02			7580-002	B17HT0	U	
R309032-03			7580-003	B17HT1	U	
R309032-04			7580-004	B17HX4	U	
R309032-05			7580-005	B17HX5	U	
R309032-06			7580-006	B17HX6	U	
R309032-07			7580-007	B17HX8	U	
R309032-08			7580-008	B17HX9	U	
R309032-09			7580-009	B17HY4	U	
R309032-10			7580-010	B17J02	U	
R309032-11			7580-011	B173W6	U	
R309032-12			7580-012	LCS (QC ID=45667)	ok	
R309032-13			7580-013	BLK (QC ID=45668)	U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil — RDLs (pCi/g) 50

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test C Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 080													
R309032-01			B17HR9	3.8	0.291			100		100			31	10/01/03	10/04	LSC-004
R309032-02			B17HT0	3.6	0.302			100		100			31	10/01/03	10/04	LSC-004
R309032-03			B17HT1	2.5	0.434			100		100			31	10/01/03	10/04	LSC-004
R309032-04			B17HX4	3.6	0.300			100		100			31	10/01/03	10/04	LSC-004
R309032-05			B17HX5	3.4	0.318			100		100			31	10/01/03	10/04	LSC-004
R309032-06			B17HX6	2.5	0.423			100		100			30	10/01/03	10/04	LSC-004
R309032-07			B17HX8	3.7	0.292			100		100			31	10/01/03	10/04	LSC-004
R309032-08			B17HX9	3.6	0.302			100		100			31	10/01/03	10/04	LSC-004
R309032-09			B17HY4	3.5	0.297			100		100			30	10/01/03	10/04	LSC-004
R309032-10			B17J02	3.7	0.282			100		100			31	10/01/03	10/04	LSC-004
R309032-11			B173W6	3.1	0.345			100		100			38	10/01/03	10/05	LSC-004
R309032-12			LCS (QC ID=45667)	16	0.200			100		11				10/01/03	10/05	LSC-004
R309032-13			BLK (QC ID=45668)	5.5	0.200			100		100				10/01/03	10/04	LSC-004
R309032-14			Duplicate (R309032-11) (QC ID=45669)	3.3	0.329			100		100			38	10/01/03	10/05	LSC-004
Nominal values and limits from method				50	0.200					50			180			

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

AVERAGES ± 2 SD FOR 14 SAMPLES
MDA 4.4 ± 6.8
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test H Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7078-080						
R309032-01			7580-001	B17HR9	0.385	
R309032-02			7580-002	B17HT0	0.820	
R309032-03			7580-003	B17HT1	U	
R309032-04			7580-004	B17HX4	6.24	
R309032-05			7580-005	B17HX5	12.4	
R309032-06			7580-006	B17HX6	5.68	
R309032-07			7580-007	B17HX8	0.295	
R309032-08			7580-008	B17HX9	U	
R309032-09			7580-009	B17HY4	16.6	
R309032-10			7580-010	B17J02	U	
R309032-11			7580-011	B173W6	21.8	
R309032-12			7580-012	LCS (QC ID=45667)	ok	
R309032-13			7580-013	BLK (QC ID=45668)	U	
R309032-14			7580-014	Duplicate (R309032-11)	ok	
R309032-15			7580-015	Spike (R309032-11)	ok	X

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil RDLs (pCi/g) 400

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test H Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 080													
R309032-01			B17HR9	0.27	20.2			32		120			37	10/09/03	10/10	LSC-007
R309032-02			B17HT0	0.25	20.9			32		120			37	10/09/03	10/10	LSC-007
R309032-03			B17HT1	0.26	20.5			34		120			37	10/09/03	10/10	LSC-007
R309032-04			B17HX4	0.26	20.4			32		120			37	10/09/03	10/10	LSC-007
R309032-05			B17HX5	0.25	20.7			32		120			38	10/09/03	10/11	LSC-007
R309032-06			B17HX6	0.25	20.9			33		120			37	10/09/03	10/11	LSC-007
R309032-07			B17HX8	0.25	21.1			31		120			38	10/09/03	10/11	LSC-007
R309032-08			B17HX9	0.25	21.0			32		120			38	10/09/03	10/11	LSC-007
R309032-09			B17HY4	0.26	20.8			32		120			37	10/09/03	10/11	LSC-007
R309032-10			B17J02	0.25	21.4			31		120			38	10/09/03	10/11	LSC-007
R309032-11			B173W6	0.26	20.8			32		120			44	10/09/03	10/11	LSC-007
R309032-12			LCS (QC ID=45667)	0.25	20.0			33		120				10/09/03	10/11	LSC-007
R309032-13			BLK (QC ID=45668)	0.25	20.0			33		120				10/09/03	10/11	LSC-007
R309032-14			Duplicate (R309032-11) (QC ID=45669)	0.25	20.6			33		120			44	10/09/03	10/11	LSC-007
R309032-15			Spike (R309032-11) (QC ID=45670)	0.23	21.5			34		120			44	10/09/03	10/11	LSC-007
Nominal values and limits from method				400	20.0					25			180			

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

AVERAGES ± 2 SD FOR 15 SAMPLES
MDA 0.25 ± 0.018
YIELD 32 ± 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test NI L Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7078-080						
R309032-01			7580-001	B17HR9	U	
R309032-02			7580-002	B17HT0	U	
R309032-03			7580-003	B17HT1	U	
R309032-04			7580-004	B17HX4	U	
R309032-05			7580-005	B17HX5	U	
R309032-06			7580-006	B17HX6	U	
R309032-07			7580-007	B17HX8	U	
R309032-08			7580-008	B17HX9	U	
R309032-09			7580-009	B17HY4	U	
R309032-10			7580-010	B17J02	U	
R309032-11			7580-011	B173W6	U	
R309032-12			7580-012	LCS (QC ID=45667)	ok	
R309032-13			7580-013	BLK (QC ID=45667)	U	
R309032-14			7580-014	Duplicate (R309032-11)	-	U

Nominal values and limits from method 200-PW-2/200-PW-4 OU-Borehole Soil — RDLs (pCi/g) 30

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2329

Test NI L Matrix SOLID
SDG 7580
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2329

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7078-080			2σ prep error 10.0 %	Reference Lab Notebook 7078 pg. 080												
R309032-01			B17HR9	2.3	0.500			91		100			35	10/08/03	10/08	LSC-004
R309032-02			B17HT0	2.3	0.500			88		100			35	10/08/03	10/08	LSC-004
R309032-03			B17HT1	2.3	0.500			92		100			35	10/08/03	10/08	LSC-004
R309032-04			B17HX4	2.5	0.500			87		100			35	10/08/03	10/08	LSC-004
R309032-05			B17HX5	2.3	0.500			89		100			35	10/08/03	10/08	LSC-004
R309032-06			B17HX6	2.3	0.500			90		100			34	10/08/03	10/08	LSC-004
R309032-07			B17HX8	2.4	0.500			90		100			35	10/08/03	10/08	LSC-004
R309032-08			B17HX9	2.8	0.500			77		100			36	10/08/03	10/09	LSC-004
R309032-09			B17HY4	2.5	0.500			87		100			35	10/08/03	10/09	LSC-004
R309032-10			B17J02	2.5	0.500			85		100			36	10/08/03	10/09	LSC-004
R309032-11			B173W6	2.4	0.500			88		100			42	10/08/03	10/09	LSC-004
R309032-12			LCS (QC ID=45667)	2.7	0.500			95		66				10/08/03	10/08	LSC-004
R309032-13			BLK (QC ID=45667)	2.2	0.500			95		100				10/08/03	10/09	LSC-004
R309032-14			Duplicate (R309032-11) (QC ID=45667)	2.5	0.500			87		100			42	10/08/03	10/09	LSC-004
Nominal values and limits from method				30	0.500			30-105		50			180			

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

AVERAGES ± 2 SD FOR 14 SAMPLES				
	MDA	2.4	±	0.34
	YIELD	89	±	9

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

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 7580
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

DUPLICATE

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

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

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

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

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

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

SDG 7580
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2329

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
Versión 3.06
Report date 10/22/03

SDG 7580
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2329

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 10/22/03

METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-242	Page 1 of 1

Collector Pope/Pfister/Hughes	**Company Contact** LC Hulstrom **Telephone No.** 373-3928	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 200-PW-4/Retention Basin – C4113 H2329 (7580)	**SAF No.** F03-006	**Air Quality** ☐
Ice Chest No. SEE OSPC	**Field Logbook No.** HNF-N-3361 **COA** 117504ES10	**Method of Shipment** Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA)	**Offsite Property No.** A030 357	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Tie To B17J00

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			
Sample No. / Matrix * / Sample Date / Sample Time										
B17HR9 / SOIL / 9-3-03 / 0841						X	X			
B17HT0 / SOIL / 9-3-03 / 0857						X	X			
B17HT1 / SOIL / 9-3-03 / 1350						X	X			
~~B17HT2 / SOIL / 9-3-03 / 9-4-03~~						X	X			

MD 9/3/03

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Mark Anderson / Date/Time: 9-3-03 1500	Received By/Stored In: MO-0260 Ref # 1 / Date/Time: 9-3-03 1500	
Relinquished By/Removed From: MO-0260 Ref # 1 / Date/Time: 9-3-03 9-4-03 1400	Received By/Stored In: Mark Anderson / Date/Time: 9-4-03 1400	
Relinquished By/Removed From: Mark Anderson / Date/Time: 9-4-03 1400	Received By/Stored In: Ref # 3C / Date/Time: 9-4-03 1400	
Relinquished By/Removed From: 3C 3728 / Date/Time: 9-5-03 1000	Received By/Stored In: R. Fillo R. Fahlberg / Date/Time: 9-5-03 1000	
Relinquished By/Removed From: R. Fillo R. Fahlberg / Date/Time: 9-5-03 1000	Received By/Stored In: FedEx / Date/Time:	
Relinquished By/Removed From: FedEx / Date/Time:	Received By/Stored In: [illegible] / Date/Time: 9-8-03 10:00	

SPECIAL INSTRUCTIONS

FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5/03

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-243	Page 1 of 1
Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom — Telephone No.: 373-3928	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin - C4114 H2329 (7580)	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: HNF-N-3361 — COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A030 357	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Tie To B17J00

Special Handling and/or Storage

N/A

None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	3	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			

TMO 9-3-03

Sample No.	Matrix *	Sample Date	Sample Time									
B17HX4	SOIL	9-3-03	0920						X	X		
B17HX5	SOIL	9-3-03	0930						X	X		
B17HX6	SOIL	9-4-03	1025						X	X		
~~B17HX7~~	~~SOIL~~			TMO	9-4-03				X	X		
* ~~B17J02~~	~~SOIL~~			TMO	9-4-03				X	X		

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Mathurson/Mathurson	9-3-03 1900	MO-02L Ref#1	9-3-03 1900
MO-02L Ref#1	9-4-03 1400	Mathurson/Mathurson	9-4-03 1400
Mathurson/Mathurson	9-4-03 1430	Ref #3C	9-4-03 1430
3C 3728	9-5-03 1000	R. Fleck/R. Fahlberg	9-5-03 1000
R. Fleck/R. Fahlberg	9-5-03 1500	FED EX	
FED EX			9-8-03 1000

SPECIAL INSTRUCTIONS

FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 Ref# 3C on 9/5/03

* Sample B17J02 WAS Received by 9-8-03

Matrix *

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-245	Page 1 of 1

Collector Pope/Pfister/Hughes	**Company Contact** LC Hulstrom **Telephone No.** 373-3928	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 200-PW-4/Retention Basin - C4115 H2329 (7580)	**SAF No.** F03-006	**Air Quality** ☐
Ice Chest No. SEE OSPC	**Field Logbook No.** HNF-N-3361 **COA** 117504ES10	**Method of Shipment** Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA)	**Offsite Property No.** A030 357	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A Tie To B17J00

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time										
B17HX8	SOIL	9-3-03	1000						X	X			
B17HX9	SOIL	9-3-03	1030						X	X			
B17HY4	SOIL	9-4-03	1240						X	X			
~~B17HY5~~	~~SOIL~~	~~9-4-03~~											
~~B17J03~~ B17J02	Soil	9-3-03	1000						X	X			

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From [signature] Date/Time 9-3-03 1500	Received By/Stored In MO-025 Ref# 19-3-03 Date/Time 1500
Relinquished By/Removed From MO-025 Ref# 19-4-03 Date/Time 1400	Received By/Stored In [signature] Date/Time 9-4-03 1400
Relinquished By/Removed From [signature] Date/Time 9-4-03 1430	Received By/Stored In Ref# 3C 9-4-03 1430
Relinquished By/Removed From 3C 9.5.03 3728 Date/Time 1000	Received By/Stored In [signature] Date/Time 1000 9.5.03
Relinquished By/Removed From Fed Ex [signature] 9-5-03 Date/Time 1000	Received By/Stored In FedEx Date/Time
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In [signature] 9-8-03 Date/Time

SPECIAL INSTRUCTIONS

FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728
Ref # 3C on 9/5 1034

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-206	Page 1 of 1

Collector Pope/Pfister/Hughes/Johansen	**Company Contact** LC Hulstrom **Telephone No.** 373-3928 H2329	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 9/2 7.10.03 216-A-36B ~~(C3248)~~ - 318.5-321' (C4160) (7580)	**SAF No.** F03-006	**Air Quality** ☐
Ice Chest No. SEE OSPC	**Field Logbook No.** HNF-N-3361 **COA** 117504ES10	**Method of Shipment** Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA)	**Offsite Property No.** A030 357	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
Tie To B174B0

Special Handling and/or Storage
None

Preservation	Cool 4C	None	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	60mL							
SAMPLE ANALYSIS	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Tritium - H3							

Sample No.	Matrix *	Sample Date	Sample Time										
B173W6	SOIL	8-28-3	12:10		X	X	X						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8-28-03 1400	MO-02e Ref#1	9-3-03 1400
MO-02e Ref#1	9-4-03 1400	[illegible]	9-4-03 1400
[illegible]	9-4-03 1430	Ref#3C	9-4-03 1430
3C 3728	9-5-03 1000	R. Fellows	9-5-03 1000
R. Fellows	9-5-03	Fed Ex	
Fed Ex		[illegible]	9-8-03 1000

SPECIAL INSTRUCTIONS
The lab is to achieve a detection limit of 50.0 pCi/g for C-14. FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Cesium-134, Radium-226, Radium-228, Tin-126}; Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium
(2) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728.
Ref # 3C on 9/5/03

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

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

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

EBERLINE SERVICES

RICHMOND, CA LABORATORY
SAMPLE RECEIPT CHECKLIST

Client: FCR Date/Time received 1000 9-8-03

CoC No. F03-006-242, 243, 245

Container I.D. No. GRC-96-019 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 11
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Samples are in correct container Yes [✓] No [ ]
9. Paperwork agrees with samples? Yes [ ] No [✓]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [✓] pH _____ Preservative _____
13. Describe any anomalies: ~~SAMPLE B17J02 WAS RECEIVED BUT IT WAS CROSSED OFF ON COC~~ Sample on another COC. 9/9/3 mcm
14. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 9-8-03
15. Received by [signature] Date: 9-8-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
ALL SAMPLES	<40						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

LvLI
LIONVILLE LABORATORY INC.

8 October 2003

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

OCT 2003
RECEIVED

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:

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

LvLI Batch #	0309L404
SDG #	H2329
SAF #	F03-006
Date Received	9-06-03
# Samples	10
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	X
DRO/GRO/KRO	
Herbicides	X
GC Alcohol	
Metals	
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

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

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

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2329

DATE RECEIVED: 09/06/03 LVL LOT # :0309L404

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17HR9	001	S	03LE1103	09/03/03	09/09/03	09/26/03
B17HR9	001 MS	S	03LE1103	09/03/03	09/09/03	09/26/03
B17HR9	001 MSD	S	03LE1103	09/03/03	09/09/03	09/26/03
B17HX4	004	S	03LE1103	09/03/03	09/09/03	09/26/03
B17HX8	007	S	03LE1103	09/03/03	09/09/03	09/26/03
B17HX9	008	S	03LE1103	09/03/03	09/09/03	09/26/03
B17HY4	009	S	03LE1103	09/04/03	09/09/03	09/26/03
B17J02	010	S	03LE1103	09/03/03	09/09/03	09/26/03

LAB QC:

PBLKET	MB1	S	03LE1103	N/A	09/09/03	09/26/03
PBLKET	MB1 BS	S	03LE1103	N/A	09/09/03	09/26/03

OCT 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0309L404
SDG/SAF #: H2329/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 09-06-03

PESTICIDE

The set of samples consisted of six (6) soil samples collected on 09-03,04-03.

The samples and their associated QC samples were extracted on 09-09-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-26-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

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

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a Sulfur cleanups.

4. The method blank was below the reporting limits for all target compounds.

5. All surrogate recoveries were within acceptance criteria.

6. Five (5) of twenty (20) blank spike recoveries were outside acceptance criteria.

   Seven (7) of forty (40) matrix spike recoveries were outside acceptance criteria.

   Insufficient control data was collected to establish control limits. The defaulted detection limits of 70-130% are used for the acceptance criteria. Copies of the form 3F are included in this report.

   A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. All initial calibrations associated with this data set were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at 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 18 pages.

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria with the exception of the target compounds listed on the calibration verification summaries included in this report. No target compounds were found in these samples.

No closing continuing calibration verification (CCV) standards were collected due to instrument failure. The surrogate recoveries were within acceptance criteria indicating no drop in instrument response, so the ability to detect the target compounds was not affected.

A copy of the SDR has been enclosed.

9. 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 data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/1/03
Date

pefr:\group\data\pest\tnu hanford\09L-404.pes

LLI
LIONVILLE LABORATORY, INC.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 036C387

Initiator: Bryce Sanford
Date: 9/30/03
Client: TNU

Batch: 03092404
Samples: all
Method: (SW846/MCAWW/CLP/)

Parameter: 0608H
Matrix: Soil
Prep Batch: 03LE1103

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

(1) ccv's prior to samples and qc were elevated. All samples are clean.
(2) Spike recoveries in bs and ms/msd.
(3) No closing ccv's

2. Known or Probable Causes(s)

(3) Instrument failure.

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: (1) Narrate, all samples are clean, no hits were quantitated ✓

(2) Insufficient control data collected to establish control limits. Acceptance limits are default limits (70,-130). None

(3) Narrate, surrogate recoveries were all within acceptance limits indicating no drop in instrument response. Ability to detect target compounds not affected.

4. Project Manager Instructions...signature/date: 10/3/03

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ 10/3/03

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

A

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lionville Laboratory Incorporated

Contract:

Client:

GC Sample ID: 092503gc20 .14

RFW Lot ID:

Millennium Result ID: 10027

Instrument ID: GC 20

Initial Calibration Start Date: 9/22/03

Date of Analysis: 9/26/03 2

Processing Method: 09220320A SPA

Time of Analysis: 2:54:19 AM

Standard ID: INDA 7104 D

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	INITIAL RESPONSE	RT	CONT. RESPONSE	%D	FL
						MEAN %D	16.8	FL +
TCX	7.33	7.26	7.40	37918	7.31	41482	9.4	
ALPHA-BHC	9.74	9.67	9.81	29973	9.73	34108	13.8	
GAMMA-BHC	11.17	11.09	11.24	27991	11.15	31864	13.8	
HEPTACHLOR	12.58	12.51	12.65	23720	12.57	27809	17.2	+
ENDOSULFAN I	17.12	17.05	17.19	19756	17.11	23118	17.0	+
DIELDRIN	18.21	18.14	18.28	40999	18.20	47916	16.9	+
ENDRIN	19.42	19.35	19.49	29895	19.41	38446	28.6	!
4,4'-DDD	19.96	19.89	20.03	32734	19.95	39870	21.8	+
4,4'-DDT	21.06	20.99	21.13	34546	21.05	40271	16.6	+
METHOXYCHLOR	23.94	23.87	24.01	74885	23.92	84297	12.6	

2 9/27/03

PTX-35

5

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lionville Laboratory Incorporated

Contract:

Client:

GC Sample ID: 092503gc20 .14

RFW Lot ID:

Millennium Result ID: 10029

Instrument ID: GC 20

Initial Calibration Start Date: 9/22/03

Date of Analysis: 9/26/03 2

Processing Method: 09220320B_SPA

Time of Analysis: 2:54:19 AM

Standard ID: INDA 7104 D

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	INITIAL RESPONSE	RT	CONT. RESPONSE	%D	FL
						MEAN %D	61.2	FL !
TCX	7.18	7.11	7.25	71237	7.17	105773	48.5	!
ALPHA-BHC	9.40	9.33	9.47	68170	9.39	103296	51.5	!
GAMMA-BHC	10.71	10.63	10.78	62478	10.69	97942	56.8	!
HEPTACHLOR	12.22	12.15	12.29	56165	12.21	89953	60.2	!
ENDOSULFAN I	16.70	16.63	16.77	42645	16.69	70280	64.8	!
DIELDRIN	17.66	17.59	17.73	80655	17.65	129932	61.1	!
ENDRIN	18.68	18.61	18.75	61238	18.67	106957	74.7	!
4,4'-DDD	19.22	19.15	19.29	61308	19.21	105636	72.3	!
4,4'-DDT	20.26	20.18	20.33	64106	20.24	109789	71.3	!
METHOXYCHLOR	22.71	22.64	22.78	117668	22.70	177590	50.9	!

KTV-CLP2

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lionville Laboratory Incorporated

Contract:

Client:

GC Sample ID: 092503gc20 .15

RFW Lot ID:

Millennium Result ID: 10030

Instrument ID: GC 20

Processing Method: 09220320B_SPB

Initial Calibration Start Date: 9/22/03

Date of Analysis: 9/26/03 2

Time of Analysis: 3:43:29 AM

Standard ID: INDB 7204 D

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	INITIAL RESPONSE	RT	CONT. RESPONSE	%D	FL
						MEAN %D	39.9	FL !
BETA-BHC	11.10	11.03	11.17	31715	11.11	40819	28.7	!
DELTA-BHC	12.15	12.08	12.22	71351	12.16	94187	32.0	!
ALDRIN	13.35	13.28	13.42	65135	13.36	86122	32.2	!
HEPT. EPOXIDE	15.40	15.33	15.47	54886	15.41	74342	35.4	!
G CHLORDANE	16.06	15.98	16.13	56283	16.07	78062	38.7	!
A CHLORDANE	16.56	16.49	16.63	54298	16.57	75506	39.1	!
4,4'-DDE	17.25	17.18	17.32	93825	17.26	131347	40.0	!
ENDOSULFAN II	19.46	19.39	19.53	75513	19.47	106684	41.3	!
ENDRIN ALDEHYDE	20.63	20.56	20.70	56835	20.64	81454	43.3	!
ENDO SULFATE	21.56	21.49	21.63	65415	21.57	96333	47.3	!
ENDRIN KETONE	23.34	23.27	23.41	66672	23.35	98427	47.6	!
DCB	27.75	27.68	27.82	94287	27.76	144051	52.8	!

RTX-CLP2

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Lionville Labs, Inc. Contract: 1343-06-01

Case No.: TNUHANFORD F03-006 H2329 RFW Lot No.: 0309L404-001

MATRIX Spike - Sample No.: B17HR9 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Alpha-BHC	14.4	0	10.1	70	70 -130
Beta-BHC	14.4	0	7.22	50 *	70 -130
Delta-BHC	14.4	0	2.16	15 *	70 -130
gamma-BHC (Lindane)	14.4	0	10.1	70	30 -125
Heptachlor	14.4	0	12.3	85	37 -126
Aldrin	14.4	0	10.1	70	27 -133
Heptachlor epoxide	14.4	0	11.5	80	70 -130
Endosulfan I	14.4	0	16.6	115	70 -130
Dieldrin	14.4	0	13.0	90	40 -125
4,4'-DDE	14.4	0	15.9	110	70 -130
Endrin	14.4	0	15.9	110	45 -130
Endosulfan II	14.4	0	9.38	65 *	70 -130
4,4'-DDD	14.4	0	11.5	80	70 -130
Endosulfan sulfate	14.4	0	4.33	30 *	70 -130
4,4'-DDT	14.4	0	11.5	80	33 -123
Methoxychlor	14.4	0	16.6	115	70 -130
Endrin ketone	14.4	0	10.8	75	70 -130
Endrin aldehyde	14.4	0	0	I	70 -130
alpha-Chlordane	14.4	0	16.6	115	70 -130
gamma-Chlordane	14.4	0	12.3	85	70 -130

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Alpha-BHC	14.4	11.5	80	13	20	70 -130
Beta-BHC	14.4	8.66	60 *	18	20	70 -130
Delta-BHC	14.4	2.16	15 *	0	20	70 -130
gamma-BHC (Lindane)	14.4	7.94	55	24	50	30 -125
Heptachlor	14.4	13.7	95	11	31	37 -126
Aldrin	14.4	10.8	75	6	43	27 -133
Heptachlor epoxide	14.4	13.0	90	11	20	70 -130
Endosulfan I	14.4	18.0	125	8	20	70 -130
Dieldrin	14.4	14.4	100	10	38	40 -125
4,4'-DDE	14.4	15.9	110	0	20	70 -130
Endrin	14.4	18.0	125	12	45	45 -130
Endosulfan II	14.4	10.1	70	7	20	70 -130
4,4'-DDD	14.4	13.7	95	17	20	70 -130
Endosulfan sulfate	14.4	10.1	70	80 *	20	70 -130
4,4'-DDT	14.4	13.7	95	17	50	33 -123
Methoxychlor	14.4	19.5	135 *	16	20	70 -130
Endrin ketone	14.4	12.3	85	12	20	70 -130
Endrin aldehyde	14.4	0	I	0	20	70 -130
alpha-Chlordane	14.4	18.0	125	8	20	70 -130
gamma-Chlordane	14.4	13.7	95	11	20	70 -130

Column to be used to flag recovery and RPD values with an asterisk

8

3F

SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Lionville Labs, Inc. Contract: 1343-06-01

Case No.: TNUHANFORD F03-006 H2329 RFW Lot No.: 0309L404

MATRIX Spike - Sample No.: PBLKETLE1103-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC	#	QC LIMITS REC
Alpha-BHC	6.67	0	4.67	70		70 -130
Beta-BHC	6.67	0	5.33	80		70 -130
Delta-BHC	6.67	0	0.667	10	*	70 -130
gamma-BHC (Lindane)	6.67	0	3.67	55		30 -125
Heptachlor	6.67	0	6.33	95		37 -126
Aldrin	6.67	0	5.33	80		27 -133
Heptachlor epoxide	6.67	0	6.00	90		70 -130
Endosulfan I	6.67	0	9.67	145	*	70 -130
Dieldrin	6.67	0	6.67	100		40 -125
4,4'-DDE	6.67	0	9.33	140	*	70 -130
Endrin	6.67	0	8.33	125		45 -130
Endosulfan II	6.67	0	6.00	90		70 -130
4,4'-DDD	6.67	0	4.67	70		70 -130
Endosulfan sulfate	6.67	0	1.33	20	*	70 -130
4,4'-DDT	6.67	0	4.00	60		33 -123
Methoxychlor	6.67	0	8.33	125		70 -130
Endrin ketone	6.67	0	6.00	90		70 -130
Endrin aldehyde	6.67	0	2.67	40	*	70 -130
alpha-Chlordane	6.67	0	8.33	125		70 -130
gamma-Chlordane	6.67	0	6.33	95		70 -130

Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery: 5 out of 20 outside limits

COMMENTS:

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

.I = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 09/30/03 13:47

RFW Batch Number: **0309L404** Client: **TNUHANFORD F03-006 H2329** Work Order: 11343606001 Page: 1

	Cust ID:	B17HR9	B17HR9	B17HR9	B17HX4	B17HX8	B17HX9
Sample Information	RFW#:	001	001 MS	001 MSD	004	007	008
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	40 %	80 %	90 %	85 %	90 %	90 %
	Decachlorobiphenyl	45 %	95 %	105 %	95 %	95 %	95 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.8 U	70 %	80 %	1.8 U	1.9 U	1.9 U
Beta-BHC		1.8 U	50 * %	60 * %	1.8 U	1.9 U	1.9 U
Delta-BHC		1.8 U	15 * %	15 * %	1.8 U	1.9 U	1.9 U
gamma-BHC (Lindane)		1.8 U	70 %	55 %	1.8 U	1.9 U	1.9 U
Heptachlor		1.8 U	85 %	95 %	1.8 U	1.9 U	1.9 U
Aldrin		1.8 U	70 %	75 %	1.8 U	1.9 U	1.9 U
Heptachlor epoxide		1.8 U	80 %	90 %	1.8 U	1.9 U	1.9 U
Endosulfan I		1.8 U	115 %	125 %	1.8 U	1.9 U	1.9 U
Dieldrin		3.6 U	90 %	100 %	3.6 U	3.7 U	3.7 U
4,4'-DDE		3.6 U	110 %	110 %	3.6 U	3.7 U	3.7 U
Endrin		3.6 U	110 %	125 %	3.6 U	3.7 U	3.7 U
Endosulfan II		3.6 U	65 * %	70 %	3.6 U	3.7 U	3.7 U
4,4'-DDD		3.6 U	80 %	95 %	3.6 U	3.7 U	3.7 U
Endosulfan sulfate		3.6 U	30 * %	70 %	3.6 U	3.7 U	3.7 U
4,4'-DDT		3.6 U	80 %	95 %	3.6 U	3.7 U	3.7 U
Methoxychlor		18 U	115 %	135 * %	18 U	19 U	19 U
Endrin ketone		3.6 U	75 %	85 %	3.6 U	3.7 U	3.7 U
Endrin aldehyde		3.6 U	I %	I %	3.6 U	3.7 U	3.7 U
alpha-Chlordane		1.8 U	115 %	125 %	1.8 U	1.9 U	1.9 U
gamma-Chlordane		1.8 U	85 %	95 %	1.8 U	1.9 U	1.9 U
Toxaphene		180 U	360 U	360 U	180 U	190 U	190 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 09/30/03 13:47

RFW Batch Number: **0309L404** Client: **TNUHANFORD F03-006 H2329** Work Order: 11343606001 Page: 2

	Cust ID:	B17HY4	B17J02	PBLKET	PBLKET BS
Sample Information	RFW#:	009	010	03LE1103-MB1	03LE1103-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	90	%	90	%	95	%	95	%								
	Decachlorobiphenyl	95	%	95	%	110	%	110	%								
==========	==========	==========	fl	==========	fl	==========	fl	==========	fl	==========	fl	==========	fl	==========	fl	==========	fl
Alpha-BHC		1.8	U	1.8	U	1.7	U	70	%								
Beta-BHC		1.8	U	1.8	U	1.7	U	80	%								
Delta-BHC		1.8	U	1.8	U	1.7	U	10	* %								
gamma-BHC (Lindane)		1.8	U	1.8	U	1.7	U	55	%								
Heptachlor		1.8	U	1.8	U	1.7	U	95	%								
Aldrin		1.8	U	1.8	U	1.7	U	80	%								
Heptachlor epoxide		1.8	U	1.8	U	1.7	U	90	%								
Endosulfan I		1.8	U	1.8	U	1.7	U	145	* %								
Dieldrin		3.5	U	3.7	U	3.3	U	100	%								
4,4'-DDE		3.5	U	3.7	U	3.3	U	140	* %								
Endrin		3.5	U	3.7	U	3.3	U	125	%								
Endosulfan II		3.5	U	3.7	U	3.3	U	90	%								
4,4'-DDD		3.5	U	3.7	U	3.3	U	70	%								
Endosulfan sulfate		3.5	U	3.7	U	3.3	U	20	* %								
4,4'-DDT		3.5	U	3.7	U	3.3	U	60	%								
Methoxychlor		18	U	18	U	17	U	125	%								
Endrin ketone		3.5	U	3.7	U	3.3	U	90	%								
Endrin aldehyde		3.5	U	3.7	U	3.3	U	40	* %								
alpha-Chlordane		1.8	U	1.8	U	1.7	U	125	%								
gamma-Chlordane		1.8	U	1.8	U	1.7	U	95	%								
Toxaphene		180	U	180	U	170	U	170	U								

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory Use Only

0309L404

Custody Transfer

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LIONVILLE LABORATORY INC.

Client: TNU Hanford F03-006

Est. Final Proj. Sampling Date:

Project #: 113.43-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Collette Johnson

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 9-6-03 Date Due: 10-6-03

		A	B	C	D	E
Refrigerator #		4	1		1	4
#/Type Container	Liquid					
	Solid	1aq	1aq	1aq	1aq	1aq
Volume	Liquid					
	Solid	60	250	125	60	125
Preservatives		–	–	–	–	–

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ORGANIC VOA	BNA	Pest/PCB	Herb	INORG Metal	CN	Hex Chrom	2003	Oil + Grease
							Lionville Laboratory Use Only		0608H	0HBGX			ICR6	IN3N2	IOGGR
001	B17HR9			S	9-3-03	0841			X	X			X	X	X
002	B17HT0					0857							X	X	X
003	B17HT1					1350							X	X	X
004	B17HX4					0920			X	X			X	X	X
005	B17HX5					0930							X	X	X
006	B17HX6				9-4-03	1025							X	X	X
007	B17HX8				9-3-03	1000			X	X			X	X	X
008	B17HX9					1030			X	X			X	X	X
009	B17HY4				9-4-03	1240			X	X			X	X	X
010	B17J02				9-3-03	1000			X	X			X	X	X

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

Special Instructions: SAF # F03-006

Rem Matrix QC

DATE/REVISIONS:

1. Did not receive volume for
2. Pest, Herb + O+G analyses for
3. Sample 010
4.
5.
6.

Lionville Laboratory Use Only

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

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

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 0.8 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-6-03	1025

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 7914 9192 7033

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-242	Page 1 of 1

Collector Pope/Pfister/Hughes	**Company Contact** LC Hulstrom **Telephone No.** 373-3928	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 200-PW-4/Retention Basin -- C4113	**SAF No.** F03-006	**Air Quality** ☐
Ice Chest No. SEE OSR	**Field Logbook No.** HNF-N-3361 **COA** 117504ES10	**Method of Shipment** Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA) RECRA	**Offsite Property No.** A030 346	**Bill of Lading/Air Bill No.** SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A Tie To 300 Bldg 00

Special Handling and/or Storage
N/A Cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time										
B17HR9	SOIL	9-3-03	0841	X	X	X	X	X	X	X			
B17HT0	SOIL	9-3-03	0857		3-03	X	X	X					
B17HT1	SOIL	9-3-03	1350			X	X	X					
~~B17HT2~~	SOIL	~~9-3-03~~	~~9-4~~			X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	9-3-03 1500	MO-026 Ref #1	9-3-03 1500
MO-026 Ref #1	9-4-03 1400	[illegible]	9-4-03
[illegible]	9-4-03 1430	Ref #3C	9-4-03 1430
3C 3728	9-5-03 1000	R. Fahlberg	9-5-03
R. Fahlberg	9-5-03 1005	Fed Ex	
Fed Ex	9-6-03 1025	[illegible]	9-6-03 1025

SPECIAL INSTRUCTIONS
FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5/03

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

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

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

FH-Central Plateau Project

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom	Telephone No.: 373-3928	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin - C4114		SAF No.: F03-006
Ice Chest No.: SEE OSRC	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ TMJ 9-3-03 Reera	Offsite Property No.: A030 346		Bill of Lading/Air Bill No.: SEE OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A Tie To B17J00

Special Handling and/or Storage

N/A cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL	
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) of Special Instructions.	Tritium - H3	

Sample No.	Matrix *	Sample Date	Sample Time									
B17HX4	SOIL	9-3-03	0920	X	X	X	X	X				
B17HX5	SOIL	9-3-03	0930			X	X	X				
B17HX6	SOIL	9-4-03 ~~9-3-03~~ TMJ 9-4-03	1025			X	X	X				
~~B17HX7~~	~~SOIL~~	~~9-3-03~~				X	X					
~~B17J02~~	~~SOIL~~	~~9-3-03~~				X	X	X				

TMJ 9-3-03

TMJ 9-4-03

TMJ 9-4-03

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	9-3-03 1500	MD-OSC REF #1	9-3-03 1500
MD-OSC REF #1	9-4-03 1400	[illegible]	9-4-03 1400
[illegible]	9-4-03 1430	REF #3C	9-4-03 1430
3C 3728	9.5.03 1000	[illegible]	9.5.03
[illegible] ERC	9.5.03 1000	Fed Ex	
Fed Ex	9.6.03/1025	[illegible]	9.6.03/1025

SPECIAL INSTRUCTIONS

FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 ~~5~~ Ref # 3C on 9/5/03

Matrix *

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

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

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

FH-Central Plateau Project

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F03-006-243

Collector Pope/Pfister/Hughes	**Company Contact** LC Hulstrom	**Telephone No.** 373-3928	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days	**Air Quality** ☐	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 200-PW-4/Retention Basin - C4115		**SAF No.** F03-006
Ice Chest No. SEE OSPC	**Field Logbook No.** HNF-N-3361	**COA** 117504ES10	**Method of Shipment** Federal Express
Shipped To Kecra DMJ 9-4-03 ~~EBERLINE SERVICES~~ (Formerly TMA)	**Offsite Property No.** A030 346		**Bill of Lading/Air Bill No.** SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A Tie to B17J00

Special Handling and/or Storage
N/A Cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions	Tritium - H3			

DMJ 9-4-03

Sample No.	Matrix *	Sample Date	Sample Time									
B17HX8	SOIL	9-3-03	1000	X	X	X	X	X				
B17HX9	SOIL	9-3-03	1030	X	X	X	X	X				
B17HY4	SOIL	9-4-03	1240	X	X	X	X	X				
~~B17HY5~~	~~SOIL~~	~~DMJ 9-4-03~~										
B17J02	SOIL	9-3-03	1000	X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	[illegible]	9-3-03	MO-026 Ref# 1	9-3-03 1500
Relinquished By/Removed From MO-026 Ref #1		9-4-03 1400	Received By/Stored In [illegible]	9-4-03 1400
Relinquished By/Removed From [illegible]		9-4-03 1430	Received By/Stored In Ref #3C	9-4-03 1430
Relinquished By/Removed From 3C 3728		9-5-03 1000	Received By/Stored In R. Filkbeiner	9-5-03 1000
Relinquished By/Removed From R. Filkbeiner		9-5-03 1000	Received By/Stored In FedEx	
Relinquished By/Removed From [illegible]		9-6-03/1025	Received By/Stored In [illegible]	9-6-03/1025

SPECIAL INSTRUCTIONS
FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

~~(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237.~~ DMJ 9-4-03

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9-5-03

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

:LIENT: TNU Hanford

urchase Order/Project:

DATE: 9-6-03

AF# SOW# / Release #: F03-006

.aboratory SDG #: Q3096404

:OTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	9-6-03 ~~☑ Yes~~	☑ No	☐ N/A	☑ see Comment # See Coc
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10.	Shipment meets LvL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ERC 99-062 / 0.8°

Laboratory Sample Custodian: D Smith

Laboratory Project Manager:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2329

DATE RECEIVED: 09/06/03 LVL LOT # :0309L404

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17HR9						
% SOLIDS	001	S	03L%S119	09/03/03	09/08/03	09/08/03
% SOLIDS	001 REP	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	001	S	03LVI068	09/03/03	09/18/03	09/18/03
CHROMIUM VI	001 REP	S	03LVI068	09/03/03	09/18/03	09/18/03
CHROMIUM VI	001 MS	S	03LVI068	09/03/03	09/18/03	09/18/03
CHROMIUM VI	001 MSD	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	001	S	03LN3B54	09/03/03	09/22/03	09/22/03
NITRATE NITRITE	001 REP	S	03LN3B54	09/03/03	09/22/03	09/22/03
NITRATE NITRITE	001 MS	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	001	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HT0						
% SOLIDS	002	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	002	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	002	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	002	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HT1						
% SOLIDS	003	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	003	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	003	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	003	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HX4						
% SOLIDS	004	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	004	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	004	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	004	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HX5						
% SOLIDS	005	S	03L%S119	09/03/03	09/08/03	09/08/03

OCT 2003
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2329

DATE RECEIVED: 09/06/03 LVL LOT # :0309L404

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	005	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	005	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	005	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HX6						
% SOLIDS	006	S	03L%S119	09/04/03	09/08/03	09/08/03
CHROMIUM VI	006	S	03LVI068	09/04/03	09/18/03	09/18/03
NITRATE NITRITE	006	S	03LN3B54	09/04/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	006	S	03LOG045	09/04/03	09/24/03	09/25/03
B17HX8						
% SOLIDS	007	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	007	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	007	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	007	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HX9						
% SOLIDS	008	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	008	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	008	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	008	S	03LOG045	09/03/03	09/24/03	09/25/03
B17HY4						
% SOLIDS	009	S	03L%S119	09/04/03	09/08/03	09/08/03
CHROMIUM VI	009	S	03LVI068	09/04/03	09/18/03	09/18/03
NITRATE NITRITE	009	S	03LN3B54	09/04/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	009	S	03LOG045	09/04/03	09/24/03	09/25/03
B17J02						
% SOLIDS	010	S	03L%S119	09/03/03	09/08/03	09/08/03
CHROMIUM VI	010	S	03LVI068	09/03/03	09/18/03	09/18/03
NITRATE NITRITE	010	S	03LN3B54	09/03/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	010	S	03LOG045	09/03/03	09/24/03	09/25/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2329

DATE RECEIVED: 09/06/03 LVL LOT # :0309L404

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
OIL AND GREASE BY GR	010 REP	S	03LOG045	09/03/03	09/24/03	09/25/03
OIL AND GREASE BY GR	010 MS	S	03LOG045	09/03/03	09/24/03	09/25/03

LAB QC:

CHROMIUM VI	MB1	S	03LVI068	N/A	09/18/03	09/18/03
CHROMIUM VI	MB1 BS	S	03LVI068	N/A	09/18/03	09/18/03
CHROMIUM VI	MB1 BSD	S	03LVI068	N/A	09/18/03	09/18/03
NITRATE NITRITE	MB1	S	03LN3B54	N/A	09/22/03	09/22/03
NITRATE NITRITE	MB1 BS	S	03LN3B54	N/A	09/22/03	09/22/03
OIL & GREASE BY GRAV	MB1	S	03LOG045	N/A	09/24/03	09/25/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG045	N/A	09/24/03	09/25/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006 H2329
LVL#: 0309L404

W.O.#: 11343-601-001-9999-00
Date Received: 09-06-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 10 soil samples.

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

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

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

5. The method blanks were within the method criteria.

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

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

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

njp\i09-404

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 17 pages.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

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

Other: **Method**

L-WI-034/B-01/01

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L404

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17HR9	% Solids	92.4	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Nitrate Nitrite	1.0	MG/KG	0.22	1.0
		Oil & Grease Gravimetri	722 u	MG/KG	722	1.0
-002	B17HT0	% Solids	91.7	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Nitrate Nitrite	5.1	MG/KG	0.23	1.0
		Oil & Grease Gravimetri	727 u	MG/KG	727	1.0
-003	B17HT1	% Solids	96.1	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Nitrate Nitrite	1.1	MG/KG	0.20	1.0
		Oil & Grease Gravimetri	694 u	MG/KG	694	1.0
-004	B17HX4	% Solids	91.9	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Nitrate Nitrite	8.9	MG/KG	0.21	1.0
		Oil & Grease Gravimetri	725 u	MG/KG	725	1.0
-005	B17HX5	% Solids	92.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Nitrate Nitrite	20.9	MG/KG	1.0	5.0
		Oil & Grease Gravimetri	723 u	MG/KG	723	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L404

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B17HX6	% Solids	95.9		%	0.01	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Nitrate Nitrite	4.5		MG/KG	0.18	1.0
		Oil & Grease Gravimetri	695	u	MG/KG	695	1.0
-007	B17HX8	% Solids	89.7		%	0.01	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Nitrate Nitrite	1.6		MG/KG	0.24	1.0
		Oil & Grease Gravimetri	743	u	MG/KG	743	1.0
-008	B17HX9	% Solids	89.1		%	0.01	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Nitrate Nitrite	0.92		MG/KG	0.24	1.0
		Oil & Grease Gravimetri	748	u	MG/KG	748	1.0
-009	B17HY4	% Solids	94.7		%	0.01	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Nitrate Nitrite	13.2		MG/KG	0.44	2.0
		Oil & Grease Gravimetri	704	u	MG/KG	704	1.0
-010	B17J02	% Solids	91.0		%	0.01	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Nitrate Nitrite,	1.3		MG/KG	0.21	1.0
		Oil & Grease Gravimetri	733	u	MG/KG	733	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L404

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LVI068-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	03LN3B54-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	03LOG045-MB1	Oil & Grease Gravimetri	667 u	MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L404

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B17HR9	Soluble Chromium VI	3.9	0.43u	4.3	83.1	1.0
		Insoluble Chromium VI	1330	0.43u	1290	103.2	100
		Nitrate Nitrite	5.4	1.0	5.7	77.4	1.0
-010	B17J02	Oil & Grease Gravimetr	5960	733 u	5900	101.0	1.0
BLANK10	03LVI068-MB1	Soluble Chromium VI	4.1	0.40u	4.0	102.4	1.0
		Insoluble Chromium VI	1390	0.40u	1420	98.1	100
BLANK10	03LN3B54-MB1	Nitrate Nitrite	5.1	0.20u	5.0	101.8	1.0
BLANK10	03LOG045-MB1	Oil & Grease Gravimetr	5430	667 u	5370	101.0	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L404

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
~~-091~~	~~B17WR9~~	~~Chromium VI~~	~~93.1~~	~~103.8~~	~~21.6~~
BLANK10	03LVI068-MB1	Chromium VI	102.4	98.1	4.4

A 9/26/03

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L404

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17HR9	% Solids	92.4	92.4	0.043	1.0
		Chromium VI	0.43u	0.43u	NC	1.0
		Nitrate Nitrite	1.0	1.0	0.49	1.0
-010REP	B17J02	Oil & Grease Gravimetri	733 u	733 u	NC	1.0

Lionville Laboratory Use Only

0309L404

Custody Transfer Record/Lab Work Request

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford F03-006

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Arlette Johnson

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 9-6-03 Date Due: 10-6-03

		A	B	C	D	E
Refrigerator #		4	1		1	4
#/Type Container	Liquid					
	Solid	1aq	1aq	1aq	1aq	1aq
Volume	Liquid					
	Solid	60	250	125	60	125
Preservatives		–	–	–	–	–

ANALYSES REQUESTED →

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	Metal	CN	Hex Chrom	NO2/NO3	Oil + Grease
							ORGANIC				INORG				
									0608H	8HBGX			ICR6	INJN2	IOGGR
001	B17HR9			S	9-3-03	0841			X	X			X	X	X
002	B17HT0					0857							X	X	X
003	B17HT1					1350							X	X	X
004	B17HX4					0920			X	X			X	X	X
005	B17HX5					0930							X	X	X
006	B17HX6				9-4-03	1025							X	X	X
007	B17HX8				9-3-03	1000			X	X			X	X	X
008	B17HX9					1030			X	X			X	X	X
009	B17HY4				9-4-03	1240			X	X			X	X	X
010	B17J02				9-3-03	1000			X	X			X	X	X

Lionville Laboratory Use Only

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

Special Instructions: SAF # F03-006

Run Matrix QC

DATE/REVISIONS:

1. Did not receive volume for Rest, Herb + O+G analyses for sample 010
2.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # ___

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 0.8 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-6-03	1025

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

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 7914 9192 7033

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-242	Page 1 of 1

Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom — Telephone No.: 373-3928	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin – C4113	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: HNF-N-3361 — COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA) RECRA	Offsite Property No.: A030 34C	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A — Tie To 300 BI 1300

Special Handling and/or Storage
N/A — Cool 4°C

SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) Special Instructions.	Tritium - H3			
Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			

Sample No.	Matrix *	Sample Date	Sample Time										
B17HR9	SOIL	9-3-03	0841	X	X	X	X	X	X	X			
B17HT0	SOIL	9-3-03	0857		3-03	X	X	X					
B17HT1	SOIL	9-3-03	1350			X	X	X					
~~B17HT2~~	SOIL	~~9-3-03~~	~~9-4~~			X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	9-3-03 1500	MO-026 Ref # 1	9-3-03 1500
MO-026 Ref # 1	9-4-03 1400	[illegible]	9-4-03
[illegible]	9-4-03 1430	Ref # 3C	9-4-03 1430
3C 3728	9-5-03 1000	[illegible]	9-5-03
[illegible]	9-5-03 1005	Fed Ex	
Fed Ex	9-6-03/1025	[illegible]	9-6-03 1025

SPECIAL INSTRUCTIONS
FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5/03

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-243	Page 1 of 1
Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom; Telephone No.: 373-3928	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐; Data Turnaround: 45 Days
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin - C4114	SAF No.: F03-006	
Ice Chest No.: SEE OSRC	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ MJ 9-3-03 Pecra	Offsite Property No.: A030 346	Bill of Lading/Air Bill No.: SEE OSRC	

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A Tie To B17J00

Special Handling and/or Storage

N/A cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time									
B17HX4	SOIL	9-3-03	0920	X	X	X	X	X				
B17HX5	SOIL	9-3-03	0930			X	X	X				
B17HX6	SOIL	9-4-03 ~~9-3-03~~	1025			X	X	X				
~~B17HX7~~	~~SOIL~~	~~9-3-03~~				X	X	X				
~~B17J02~~	~~SOIL~~	~~9-3-03~~				X	X	X				

TMJ 9-3-03

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	9-3-03 1500	MD-03 REF #1	9-3-03 1500
MD-03 REF #1	9-4-03 1400	[illegible]	9-4-03 1400
[illegible]	9-4-03 1430	REF #3C	9-4-03 1430
3C 3728	9.5.03 1000	[illegible]	9.5.03 1000
[illegible]	9-5-03 1000	Fed Ex	
Fed Ex	9.6.03/1025	[illegible]	9.6.03/1025

SPECIAL INSTRUCTIONS

FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 ~~5~~ Ref # 3C on 9/5/03

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-245	Page 1 of 1

Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom	Telephone No.: 373-3928	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin - C4115	SAF No.: F03-006	
Ice Chest No.: SEE OSPC	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Reera TMJ 9-4-03	Offsite Property No.: A030 546		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A Tie to B17J00

Special Handling and/or Storage
N/A Cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time										
B17HX8	SOIL	9-3-03	1000	X	X	X	X	X					
B17HX9	SOIL	9-3-03	1030	X	X	X	X	X					
B17HY4	SOIL	9-4-03	1240	X	X	X	X	X					
~~B17HY5~~	~~SOIL~~	~~TMJ 9-4-03~~											
B17J02	SOIL	9-3-03	1000	X	X	X	X	X					

TMJ 9-4-03

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: TMJ Morrison/Tom Morrison	Received By/Stored In: MO-Dale Ref#1	9-3-03 1500
Relinquished By/Removed From: MO-Dale Ref#1	Received By/Stored In: TMJ Morrison/Tom Morrison	9-4-03 1400
Relinquished By/Removed From: TMJ Morrison/Tom Morrison	Received By/Stored In: Ref#3C	9-4-03 1430
Relinquished By/Removed From: 3C 3728	Received By/Stored In: R. Fehlberg R. Fehlberg	9-5-03 1000
Relinquished By/Removed From: R. Fehlberg R. Fehlberg	Received By/Stored In: FedEx	9-5-03 1000
Relinquished By/Removed From: FedEx	Received By/Stored In: D. Smith	9-6-03 1025

SPECIAL INSTRUCTIONS
FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

~~(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232), Carbon-14, Iodine-129; Nickel-63; Neptunium-237.~~ TMJ 9-4-03

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5 1035

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU Hanford

ırchase Order/Project:

DATE: 9-6-03

AF# SOW# / Release #: F03-006

aboratory SDG #: 0309L404

OTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	9-6-03 ~~☑ Yes~~	☑ No	☐ N/A	☑ see Comment # See Coc
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ERC 99-062 / 0.8°

Laboratory Sample Custodian: D. Smith

Laboratory Project Manager:

Lionville Laboratory, Inc.
HBGX ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2329

DATE RECEIVED: 09/06/03 LVL LOT # :0309L404

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17HR9	001	S	03LE1155	09/03/03	09/16/03	09/26/03
B17HX4	004	S	03LE1155	09/03/03	09/16/03	09/26/03
B17HX8	007	S	03LE1155	09/03/03	09/16/03	09/26/03
B17HX8	007 MS	S	03LE1155	09/03/03	09/16/03	09/26/03
B17HX8	007 MSD	S	03LE1155	09/03/03	09/16/03	09/26/03
B17HX9	008	S	03LE1155	09/03/03	09/16/03	09/26/03
B17HY4	009	S	03LE1155	09/04/03	09/16/03	09/26/03
B17J02	010	S	03LE1155	09/03/03	09/16/03	09/26/03
LAB QC:						
PBLKFU	MB1	S	03LE1155	N/A	09/16/03	09/18/03
PBLKFU	MB1 BS	S	03LE1155	N/A	09/16/03	09/18/03

OCT 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0309L404
SDG/SAF#: H2329/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 09-06-03

HERBICIDE

The set of samples consisted of six (6) soil samples collected on 09-03,04-03.

The samples and their associated QC samples were extracted on 09-16-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-18,26-03. The extraction and analysis procedure was based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LVLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. Nine (9) of sixteen (16) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. To the best of my knowledge, this data report is in compliance with the terms and conditions of the purchase order, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hard copy data package and in the electronic data submitted on diskette has been authorized by the cognizant laboratory manager or his/her designee to be accurate as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/6/03
Date

pefr:\group\data\herb\\tnu\09L-404.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at 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.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 036C390

Initiator: D. Walker
Date: 9/30/03
Client: TNU

Batch: 0309L404
Samples: 0075,7
Method: SW846/MCAWW/CLP/

Parameter: OHBGXK
Matrix: soil
Prep Batch: 03LE1155

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

MS/MSD recoveries are low for several analytes. All surrogate recoveries are within acceptance criteria. All BS recoveries are within acceptance criteria.

2. Known or Probable Causes(s)

Likely matrix effect.

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: report narrative

4. Project Manager Instructions...signature/date: 9/30/03

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 9/30/03 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Lionville Labs, Inc. Contract: 1343-06-01

Case No.: TNUHANFORD F03-006 H2329 RFW Lot No.: 0309L404-007

MATRIX Spike - Sample No.: B17HX8 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Dalapon	928	0	393	42 *	50 -150
Dicamba	371	0	36.0	10 *	50 -150
Dichloroprop	928	0	491	53	50 -150
2,4-D	186	7.06	82.5	41	41 -144
2,4,5-TP (Silvex)	92.8	0	57.6	62	42 -148
2,4,5-T	92.8	0	34.2	37 *	60 -143
2,4-DB	928	0	388	42 *	60 -160
Dinoseb	186	0	91.0	49	20 -100

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Dalapon	928	429	46 *	9	200	50 -150
Dicamba	371	50.1	14 *	33	200	50 -150
Dichloroprop	928	429	46 *	14	200	50 -150
2,4-D	186	86.5	43	4	200	41 -144
2,4,5-TP (Silvex)	92.8	63.9	69	10	200	42 -148
2,4,5-T	92.8	41.6	45 *	19	200	60 -143
2,4-DB	928	445	48 *	13	200	60 -160
Dinoseb	186	114	61	21	200	20 -100

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 8 outside limits
Spike Recovery: 9 out of 16 outside limits

COMMENTS:

3F

SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Lionville Labs, Inc. Contract: 1343-06-01

Case No.: TNUHANFORD F03-006 H2329 RFW Lot No.: 0309L404

MATRIX Spike - Sample No.: PBLKFULE1155-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Dalapon	833	0	446	53	50 -150
Dicamba	333	0	258	78	50 -150
Dichloroprop	833	0	760	91	50 -150
2,4-D	167	0	119	71	41 -144
2,4,5-TP (Silvex)	83.3	0	67.7	81	42 -148
2,4,5-T	83.3	0	65.0	78	60 -143
2,4-DB	833	0	722	87	60 -160
Dinoseb	167	0	145	87	20 -100

Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery: 0 out of 8 outside limits

COMMENTS:

GLOSSARY OF HERBICIDE DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

VLI
VORHEES LABORATORY INC.

GLOSSARY OF HERBICIDE DATA

= This flag is used for an Herbicide target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

) = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by HPLC.

R:/SHARE/HPLC/OLCSCGLOS

Lionville Laboratory, Inc.
Herbicides, Special List

RFW Batch Number: **0309L404** Client: **TNUHANFORD F03-006 H2329** Work Order: 11343606001 Page: 1 Report Date: 09/30/03 15:06

	Cust ID:	B17HR9	B17HX4	B17HX8	B17HX8	B17HX8	B17HX9
Sample Information	RFW#:	001	004	007	007 MS	007 MSD	008
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	49 %	77 %	70 %	51 %	57 %	69 %
Dalapon		180 U	180 U	190 U	42 * %	46 * %	190 U
Dicamba		72 U	73 U	74 U	10 * %	14 * %	75 U
Dichloroprop		180 U	180 U	190 U	53 %	46 * %	190 U
2,4-D		36 U	36 U	7.1 J	41 %	43 %	37 U
2,4,5-TP (Silvex)		18 U	3.3 J	19 U	62 %	69 %	19 U
2,4,5-T		18 U	18 U	19 U	37 * %	45 * %	19 U
2,4-DB		180 U	180 U	190 U	42 * %	48 * %	190 U
Dinoseb		18 U	18 U	19 U	49 %	61 %	19 U

	Cust ID:	B17HY4	B17J02	PBLKFU	PBLKFU BS
Sample Information	RFW#:	009	010	03LE1155-MB1	03LE1155-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	42 %	62 %	76 %	97 %
Dalapon		180 U	180 U	170 U	53 %
Dicamba		70 U	73 U	67 U	78 %
Dichloroprop		180 U	180 U	170 U	91 %
2,4-D		35 U	37 U	33 U	71 %
2,4,5-TP (Silvex)		18 U	18 U	17 U	81 %
2,4,5-T		18 U	18 U	17 U	78 %
2,4-DB		180 U	180 U	170 U	87 %
Dinoseb		18 U	18 U	17 U	87 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

7/8/3/30/03

Lionville Laboratory Use Only

0309L404

Custody Transfer Record

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford F03-006

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Arlette Johnson

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 9-6-03 Date Due: 10-6-03

		A	B	C	D	E
Refrigerator #		4	1		1	4
#/Type Container	Liquid					
	Solid	1aq	1aq	1aq	1aq	1aq
Volume	Liquid					
	Solid	60	250	125	60	125
Preservatives		–	–	–	–	–

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ORGANIC VOA	BNA	Pest/PCB	Herb			INORG Metal	CN	Hex Chrom	NO2/NO3	Oil + Grease
									0608H	0HBGX					ICP6	INN2	IOGGR
001	B17HR9			S	9-3-03	0841			X	X					X	X	X
002	B17HT0					0857									X	X	X
003	B17HT1					1350									X	X	X
004	B17HX4					0920			X	X					X	X	X
005	B17HX5					0930									X	X	X
006	B17HX6				9-4-03	1025									X	X	X
007	B17HX8				9-3-03	1000			X	X					X	X	X
008	B17HX9					1030			X	X					X	X	X
009	B17HY4				9-4-03	1240			X	X					X	X	X
010	B17J02				9-3-03	1000			X	X					X	X	X

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

Special Instructions: SAF # F03-006

Rem Matrix QC

DATE/REVISIONS:

1. Did not receive volume for
2. Rest, Herb + O+G analyses for
sample 010
4.
5.
6.

Lionville Laboratory Use Only

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

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

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 0.8 °C

Relinquished by	Received by	Date	Time
Lee Ex	[illegible]	9-6-03	1025

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

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

7914 9192 7033

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-242	Page 1 of 1

Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom — Telephone No.: 373-3928	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin -- C4113	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: SEE OSPL	Field Logbook No.: HNF-N-3361 — COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA) RECRA	Offsite Property No.: A030 346	Bill of Lading/Air Bill No.: SEE OSPL	

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A — Tie To ~~Foo~~ B17T00

Special Handling and/or Storage
N/A — Cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time									
B17HR9	SOIL	9-3-03	0841	X	X	X	X	X	X	X		
B17HT0	SOIL	9-3-03	0857		9-3-03	X	X	X				
B17HT1	SOIL	9-3-03	1350			X	X	X				
~~B17HT2~~	SOIL	~~9-3-03~~	~~MO 9-4-03~~			X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	9-3-03 1500	MO-026 Ref # 1	9-3-03 1500
MO-026 Ref # 1	9-4-03 1400	[signature]	9-4-03
[signature]	9-4-03 1430	Ref # 3C	9-4-03 1430
3C 3728	9-5-03 1000	R. Fahlberg R. Fahlberg	9-5-03
R. Fahlberg R. Fahlberg	9-5-03 1005	Fed Ex	
Fed Ex	9-6-03 / 1025	[signature]	9-6-03 / 1025

SPECIAL INSTRUCTIONS
FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5/03

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-000-243
Collector: Pope/Pfister/Hughes	Company Contact: LC Hulstrom	Telephone No.: 373-3928	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 200-PW-4/Retention Basin - C4114	SAF No.: F03-006	
Ice Chest No.: SEE OSRC	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ TMJ 9-3-03 Reera	Offsite Property No.: A030 346		Bill of Lading/Air Bill No.: SEE OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A Tie To B17J00

Special Handling and/or Storage

N/A cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) of Special Instructions.	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time									
B17HX4	SOIL	9-3-03	0920	X	X	X	X	X				
B17HX5	SOIL	9-3-03	0930		X	X	X					
B17HX6	SOIL	9-4-03 ~~9-3-03~~ TMJ 9-4-03	1025			X	X	X				
~~B17HX7~~	~~SOIL~~	~~9-3-03~~				X	X	X				
~~B17J02~~	~~SOIL~~	~~9-3-03~~				X	X	X				

TMJ 9-3-03

TMJ 9-4-03

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Mortensen/Martinez	9-3-03 1500	MO-03 Ref #1	9-3-03 1500
MO-03 Ref #1	9-4-03 1400	Mortensen/Martinez	9-4-03 1400
Mortensen/Martinez	9-4-03 1430	Ref #3C	9-4-03 1430
3C 3728	9.5.03 1000	Rebecca R. Fahlberg	9.5.03 1000
Rebecca R. Fahlberg	9.5.03 1000	Fed Ex	
Fed Ex	9.6.03/1025	D. Smith	9.6.03/1025

SPECIAL INSTRUCTIONS

FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Personnel not available to relinquish samples from the 3728 ~~Ref~~ Ref # 3C on 9/5/03

Matrix *

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

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

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-245	Page 1 of 1

Collector Pope/Pfister/Hughes	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location 200-PW-4/Retention Basin - C4115		SAF No. F03-006
Ice Chest No. SEE OSPC	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To Reera TMJ 9-4-03 ~~EBERLINE SERVICES~~ (Formerly TMA)	Offsite Property No. A030346		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A Tie to B17J00

Special Handling and/or Storage
N/A Cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	125mL	60mL	125mL	60mL	60mL			
SAMPLE ANALYSIS	Pesticides - 8081	Chloro-Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions	Tritium - H3			

Sample No.	Matrix *	Sample Date	Sample Time										
B17HX8	SOIL	9-3-03	1000	X	X	X	X	X					
B17HX9	SOIL	9-3-03	1030	X	X	X	X	X					
B17HY4	SOIL	9-4-03	1240	X	X	X	X	X					
~~B17HY5~~	~~SOIL~~	TMJ 9-4-03											
B17J02	SOIL	9-3-03	1000	X	X	X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Morrison/Morrison	9-3-03	MO-Dee LOF #1	9-3-03 1500
MO-Dee LOF #1	9-4-03 1400	Morrison/Morrison	9-4-03 1400
Morrison/Morrison	9-4-03 1430	LOF #3C	9-4-03 1430
3C 3728	9-5-03 1000	R. Fehlberg R Fehlberg	9-5-03 1000
R Fehlberg R Fehlberg	9-5-03 1000	Fed Ex	
Fed Ex	9-6-03/1025	Williams	9-6-03/1025

SPECIAL INSTRUCTIONS
RH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

~~(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237~~ TMJ 9-4-03

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5 10 3C

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU Hanford

rchase Order/Project:

DATE: 9-6-03

AF# SOW# / Release #: F03-006

aboratory SDG #: 0309L404

OTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	9-6-03 ~~☑ Yes~~	☑ No	☐ N/A	☑ see Comment # See C.o.
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ERC 99-062 / 0.8

Laboratory Sample Custodian: DJSmith

Laboratory Project Manager:

13

LvLI
LIONVILLE LABORATORY INC.

15 September 2003

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

SEP 2003 RECEIVED

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:

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

LvLI Batch #	0309L406
SDG #	H2329
SAF #	F03-006
Date Received	9-06-03
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

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

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2329

DATE RECEIVED: 09/06/03 LVL LOT # :0309L406

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B173W6						
% SOLIDS	001	S	03L%S119	08/28/03	09/08/03	09/08/03
% SOLIDS	001 REP	S	03L%S119	08/28/03	09/08/03	09/08/03
CHROMIUM VI	001	S	03LVI068	08/28/03	09/18/03	09/18/03
CHROMIUM VI	001 REP	S	03LVI068	08/28/03	09/18/03	09/18/03
CHROMIUM VI	001 MS	S	03LVI068	08/28/03	09/18/03	09/18/03
CHROMIUM VI	001 MSD	S	03LVI068	08/28/03	09/18/03	09/18/03
NITRATE NITRITE	001	S	03LN3B54	08/28/03	09/22/03	09/22/03
NITRATE NITRITE	001 REP	S	03LN3B54	08/28/03	09/22/03	09/22/03
NITRATE NITRITE	001 MS	S	03LN3B54	08/28/03	09/22/03	09/22/03
OIL & GREASE BY GRAV	001	S	03LOG046	08/28/03	09/25/03	09/26/03
OIL AND GREASE BY GR	001 REP	S	03LOG046	08/28/03	09/25/03	09/26/03
OIL AND GREASE BY GR	001 MS	S	03LOG046	08/28/03	09/25/03	09/26/03

LAB QC:

CHROMIUM VI	MB1	S	03LVI068	N/A	09/18/03	09/18/03
CHROMIUM VI	MB1 BS	S	03LVI068	N/A	09/18/03	09/18/03
CHROMIUM VI	MB1 BSD	S	03LVI068	N/A	09/18/03	09/18/03
NITRATE NITRITE	MB1	S	03LN3B54	N/A	09/22/03	09/22/03
NITRATE NITRITE	MB1 BS	S	03LN3B54	N/A	09/22/03	09/22/03
OIL & GREASE BY GRAV	MB1	S	03LOG046	N/A	09/25/03	09/26/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG046	N/A	09/25/03	09/26/03

SEP 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006 H2329
LVL#: 0309L406

W.O.#: 11343-601-001-9999-00
Date Received: 09-06-03

INORGANIC NARRATIVE

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

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

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

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

5. The method blanks were within the method criteria.

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

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

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

09-26-03
Date

njp\i09-406

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 11 pages.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		✓ 9071A (mod.)	✓ 413.1 (mod.)
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
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 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L406

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B173W6	% Solids	96.5		%	0.01	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Nitrate Nitrite	14.5		MG/KG	0.44	2.0
		Oil & Grease Gravimetri	691	u	MG/KG	691	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L406

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LVI068-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	03LN3B54-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	03LOG046-MB1	Oil & Grease Gravimetri	667 u	MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L406

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B173W6	Soluble Chromium VI	4.1	0.42u	4.1	97.0	1.0
		Insoluble Chromium VI	1280	0.42u	1320	97.5	100
		Nitrate Nitrite	19.3	14.5	5.4	89.1	2.0
		Oil & Grease Gravimetr	5630	691 u	5500	102.3	1.0
BLANK10	03LVI068-MB1	Chromium VI	4.1	0.40u	4.0	102.4	1.0
		Chromium VI MSD	1390	0.40u	1420	98.1	100
BLANK10	03LN3B54-MB1	Nitrate Nitrite	5.1	0.20u	5.0	101.8	1.0
BLANK10	03LOG046-MB1	Oil & Grease Gravimetr	5290	667 u	5310	99.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/26/03

CLIENT: TNUHANFORD F03-006 H2329 LVL LOT #: 0309L406

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B173W6	% Solids	96.5	95.9	0.62	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		Nitrate Nitrite	14.5	14.3	1.0	2.0
		Oil & Grease Gravimetri	691 u	691 u	NC	1.0

Lionville Laboratory Use Only

03092406

Custody Transfer Record/Lab

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A

Client: TNU-Hanford F03-006

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Arlette Johnson

QC: SPZ Del: 510 TAT: 30 days

Date Rec'd: 9-6-03 Date Due: 10-6-03

Refrigerator #													4					
#/Type Container	Liquid																	
	Solid												1qt					
Volume	Liquid																	
	Solid												60					
Preservatives																		
ANALYSES REQUESTED →		ORGANIC								INORG								
		VOA	BNA	Pest/PCB	Herb					Metal	CN		NO2, NO3	Oil + Grease	Hex Chrom			
		Lionville Laboratory Use Only											INNO2	IOGGR	ICR6			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	INNO2	IOGGR	ICR6
001	B173W6	X	X	S	8-28-03	1210	X	X	X

Special Instructions: SAF # F03-006

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

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # ___

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 08 °C

Relinquished by	Received by	Date	Time
Dave	W Smith	9-6-03	10:25

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

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 7914 9192 7033

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-206	Page 1 of 1

Collector Pope/Pfister/Hughes/Johansen	**Company Contact** LC Hulstrom **Telephone No.** 373-3928	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 7-10-03 216-A-36B ~~(C3248)~~ - 318.5-321' (C4160)	**SAF No.** F03-006	**Air Quality** ☐
Ice Chest No. SEE OSPC	**Field Logbook No.** HNF-N-3361 **COA** 117504ES10	**Method of Shipment** Federal Express	
Shipped To ~~EBERLINE SERVICES (Formerly TMA)~~ TMJ 7-1-03	**Offsite Property No.** A030346	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie To ~~B~~ 1317430

Special Handling and/or Storage

Cool 4oC

Preservation	Cool 4C	None	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	60mL							
SAMPLE ANALYSIS	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Tritium - H3							

8/22/03

Sample No.	Matrix *	Sample Date	Sample Time										
B173W6	SOIL	8-28-3	12:10	X									

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	8-28-03 1400	MO-026 Ref #1	9-3-03 1400
MO-026 Ref #1	9-4-03 1400	[signature]	9-4-03
[signature]	9-4-03 1430	Ref #3C	9-4-03 1430
3C 3728	9-5-03 1000	R. Fahlberg	9-5-03 1000
R. Fahlberg	9-5-03 1000	Fed Ex	
[signature]	9-6-03 1025	[signature]	9-6-03 1025

SPECIAL INSTRUCTIONS 8/22/03

~~The lab is to achieve a detection limit of 50.0 pCi/g for C-14.~~ FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radl characteristics.

~~(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-156); Gamma Spec - Add on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium~~

~~(2) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237~~

8/22/03

Personnel not available to relinquish samples from the 3728 Ref # 3C on 9/5/03

Matrix *

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU

urchase Order/Project:

DATE: 9-6-03

AF#/SOW# / Release #: F03-006

aboratory SDG #: 03096406

OTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10.	Shipment meets LvLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ERC 99.062 / 0.8°

Laboratory Sample Custodian: [illegible]

Laboratory Project Manager: