EBERLINE SERVICES

0060800

July 22, 2003

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

Reference: **P.O. #630**
Eberline Services R3-05-191-7528, SDG H2242 – Supplemental Report

Dear Mr. Trent:

Enclosed is the data report for four solid samples designated under SAF No. F03-006 received at Eberline Services on May 28, 29, and 30, 2003. The samples were analyzed according to the accompanying chain-of-custody documents. This supplemental report is being issued to report cesium-234 and tin-126 gamma spectroscopy data.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

JUL 2003
RECEIVED

RECEIVED
NOV 24 2003
EDMC

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

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2242 was composed of four solid (soil) samples designated under SAF No. F03-006 with a Project Designations 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

There was contamination in the method blank (0.773 pCi/g). The activity was below the RDL for Tc-99 (15 pCi/g). The activity in the method blank is probably from a long-lived isotope in the tracer. No other problems were encountered during the course of the analyses.

2.6 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

The Th-230 RPD between sample B17115 and its sample duplicate was 83%, greater than the 3σ limit of 75%. The difference between sample B17115 and its sample duplicate was less than the RDL (1.0 pCi/g) for Th-230. No other 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

The LCS percent recovery (74%) was below the laboratory protocol limits (80 to 120%), but was within the contract limits (70 to 130%). No other problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

The Pu samples were reanalyzed because samples B17124 and B17115 cross contaminated each other, and the other Pu samples. The data from the reanalysis of the Pu samples is reported herein. No problems were encountered during the course of the reanalyses.

2.12 Americium-241 Analyses

Due to Pu contamination in the Am-241 sample aliquots samples B17124, B17115, and the sample duplicate were reworked in chemistry to remove the contamination. The data from the rework of the samples are reported herein. No other 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

7/22/3

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 H2242

SDG	7528
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2242

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	10
Lab Control Samples	13
Duplicates	15
Matrix Spikes	18
Data Sheets	19
Method Summaries	27
Report Guides	48
End of Section	62

Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/22/03

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 H2242

SDG 7528
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R305191-01	B17124	216-A-10 (C3247)	SOLID		F03-006	F03-006-106	05/20/03 09:45
R305191-02	B17115	216-A-10 (C3247)	SOLID		F03-006	F03-006-106	05/20/03 08:30
R305191-03	B17116	216-A-10 (C3247)	SOLID		F03-006	F03-006-107	05/27/03 10:30
R305191-04	B17123	216-A-10 (C3247)	SOLID		F03-006	F03-006-107	05/27/03 10:30
R305191-05	Lab Control Sample		SOLID		F03-006		
R305191-06	Method Blank		SOLID		F03-006		
R305191-07	Duplicate (R305191-02)	216-A-10 (C3247)	SOLID		F03-006		05/20/03 08:30
R305191-08	Spike (R305191-02)	216-A-10 (C3247)	SOLID		F03-006		05/20/03 08:30
R305191-09	Lab Control Sample		SOLID		F03-006		
R305191-10	Method Blank		SOLID		F03-006		
R305191-11	Duplicate (R305191-02)	216-A-10 (C3247)	SOLID		F03-006		05/20/03 08:30

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

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
7528	F03-006-106	B17115	SOLID	88.1	159.7 g		05/29/03	9	R305191-02	7528-002
		B17124	SOLID	87.2	185.0 g		05/29/03	9	R305191-01	7528-001
	F03-006-107	B17116	SOLID	90.9	209.3 g		05/30/03	3	R305191-03	7528-003
		B17123	SOLID	90.3	230.6 g		05/30/03	3	R305191-04	7528-004
		Method Blank	SOLID						R305191-06	7528-006
		Method Blank	SOLID						R305191-10	7528-010
		Lab Control Sample	SOLID						R305191-05	7528-005
		Lab Control Sample	SOLID						R305191-09	7528-009
		Duplicate (R305191-02)	SOLID	88.1	159.7 g		05/29/03	9	R305191-07	7528-007
		Duplicate (R305191-02)	SOLID	88.1	159.7 g		05/29/03	9	R305191-11	7528-011
		Spike (R305191-02)	SOLID	88.1	159.7 g		05/29/03	9	R305191-08	7528-008

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

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	7071-037	5.0	4			1	1	1/1		
NP	SOLID	Neptunium in Soil	7071-037	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7071-037	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7071-037	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7071-037	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7071-037	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7071-037	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7071-037	15.0	4			1	1	1/1		
I	SOLID	Iodine 129 in Soil	7071-037	10.0	4			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Soil	7071-037	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7071-037	10.0	4			1	1	1/1		
H	SOLID	Tritium in Soil	7071-037	10.0	4			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7071-037	10.0	4			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-01	B17124			7528-001	AM	R1	07/07/03	07/17/03	MCM	Americium 241 in Soil
05/20/03	216-A-10 (C3247)		SOLID	7528-001	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/29/03	F03-006-106	F03-006		7528-001	GAM		06/20/03	07/17/03	MCM	Gamma Scan
				7528-001	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-001	I		07/02/03	07/17/03	MCM	Iodine 129 in Soil
				7528-001	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-001	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-001	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-001	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-001	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-001	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-001	U		07/10/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-001	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-02	B17115			7528-002	AM	R1	07/07/03	07/17/03	MCM	Americium 241 in Soil
05/20/03	216-A-10 (C3247)		SOLID	7528-002	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/29/03	F03-006-106	F03-006		7528-002	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-002	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-002	I		07/02/03	07/17/03	MCM	Iodine 129 in Soil
				7528-002	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-002	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-002	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-002	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-002	TC		06/29/03	07/17/03	MCM	Technetium 99 in Soil
				7528-002	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-002	U		07/10/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-002	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-03	B17116			7528-003	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
05/27/03	216-A-10 (C3247)		SOLID	7528-003	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/30/03	F03-006-107	F03-006		7528-003	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-003	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-003	I		07/03/03	07/17/03	MCM	Iodine 129 in Soil
				7528-003	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-003	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-003	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-003	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-003	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-003	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-003	U		07/10/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-003	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-04	B17123			7528-004	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
05/27/03	216-A-10 (C3247)		SOLID	7528-004	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/30/03	F03-006-107	F03-006		7528-004	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-004	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-004	I		07/03/03	07/17/03	MCM	Iodine 129 in Soil
				7528-004	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-004	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-004	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-004	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-004	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-004	TH		07/11/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-004	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-004	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-05	Lab Control Sample			7528-005	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
			SOLID	7528-005	C		07/12/03	07/17/03	MCM	Carbon 14 in Soil
		F03-006		7528-005	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-005	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-005	I		07/04/03	07/17/03	MCM	Iodine 129 in Soil
				7528-005	NI_L		06/27/03	07/17/03	MCM	Nickel 63 in Soil
				7528-005	NP		06/27/03	07/17/03	MCM	Neptunium in Soil
				7528-005	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-005	TC		07/01/03	07/17/03	MCM	Technetium 99 in Soil
				7528-005	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-005	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-005	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-06	Method Blank			7528-006	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
			SOLID	7528-006	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
		F03-006		7528-006	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-006	H		06/24/03	07/17/03	MCM	Tritium in Soil
				7528-006	I		07/05/03	07/17/03	MCM	Iodine 129 in Soil
				7528-006	NI_L		06/27/03	07/17/03	MCM	Nickel 63 in Soil
				7528-006	NP		06/27/03	07/17/03	MCM	Neptunium in Soil
				7528-006	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-006	TC		07/01/03	07/17/03	MCM	Technetium 99 in Soil
				7528-006	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-006	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-006	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-07	Duplicate (R305191-02)			7528-007	AM	R1	07/07/03	07/17/03	MCM	Americium 241 in Soil
05/20/03	216-A-10 (C3247)		SOLID	7528-007	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/29/03		F03-006		7528-007	GAM		06/22/03	07/17/03	MCM	Gamma Scan
				7528-007	H		06/24/03	07/17/03	MCM	Tritium in Soil
				7528-007	I		07/06/03	07/17/03	MCM	Iodine 129 in Soil
				7528-007	NI_L		06/27/03	07/17/03	MCM	Nickel 63 in Soil
				7528-007	NP		06/27/03	07/17/03	MCM	Neptunium in Soil
				7528-007	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-007	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-007	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-007	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-007	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-08 05/20/03 05/29/03	Spike (R305191-02) 216-A-10 (C3247)	F03-006	SOLID	7528-008	H		06/24/03	07/17/03	MCM	Tritium in Soil
R305191-09	Lab Control Sample	F03-006	SOLID	7528-009	PU		07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
R305191-10	Method Blank	F03-006	SOLID	7528-010	PU		07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
R305191-11 05/20/03 05/29/03	Duplicate (R305191-02) 216-A-10 (C3247)	F03-006	SOLID	7528-011	PU		07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids

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	4			1	1	1		7
C	F03-006	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1		7
GAM	F03-006	Gamma Scan	GAMMA_GS	4			1	1	1		7
H	F03-006	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
I	F03-006	Iodine 129 in Soil	I129_SEP_LEPS_GS	4			1	1	1		7
NI_L	F03-006	Nickel 63 in Soil	NI63_LSC	4			1	1	1		7
NP	F03-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	4			1	1	1		7
PU	F03-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1		7
SR	F03-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
TC	F03-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1		7
TH	F03-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	4			1	1	1		7
U	F03-006	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1		7
U_T	F03-006	Uranium, Total in Soil	UTOT_KPA	4			1	1	1		7
TOTALS				52			13	13	13	1	92

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-006 Method Blank

METHOD BLANK

SDG	7528	Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R305191-06	Client sample id	Method Blank
Dept sample id	7528-006	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	-0.096	0.17	0.29	400	U	H
Carbon 14	14762-75-5	-0.207	1.5	2.6	50	U	C
Nickel 63	13981-37-8	-1.08	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	-0.048	0.13	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.773	0.20	0.53	15		TC
Thorium 228	14274-82-9	0	0.066	0.25		U	TH
Thorium 230	14269-63-7	0.131	0.20	0.31	1.0	U	TH
Thorium 232	TH-232	0	0.066	0.25	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0	0.004	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.043	0.16	1.0	U	U
Uranium 235	15117-96-1	0	0.052	0.20	1.0	U	U
Uranium 238	U-238	0	0.043	0.16	1.0	U	U
Neptunium 237	13994-20-2	0	0.040	0.060	1.0	U	NP
Americium 241	14596-10-2	0	0.053	0.20	1.0	U	AM
Iodine 129	15046-84-1	-0.074	0.26	0.58	2.0	U	I
Potassium 40	13966-00-2	U		17		U	GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Tin 126	15832-50-5	U		0.13		U	GAM
Cesium 134	13967-70-9	U		0.15		U	GAM
Cesium 137	10045-97-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	U		0.41		U	GAM
Radium 228	15262-20-1	U		0.57		U	GAM
Europium 152	14683-23-9	U		0.29	0.10	U	GAM
Europium 154	15585-10-1	U		0.35	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Thorium 228	14274-82-9	U		0.42		U	GAM
Thorium 232	TH-232	U		0.57		U	GAM
Uranium 235	15117-96-1	U		0.40		U	GAM
Uranium 238	U-238	U		14		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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-006 Method Blank

BLANK, cont.

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-06	Client sample id	Method Blank		
Dept sample id	7528-006	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
Americium 241	14596-10-2	U		0.10		U	GAM

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

QC-BLANK #44884

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-010 **Method Blank**

METHOD BLANK

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-10	Client sample id	Method Blank		
Dept sample id	7528-010	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
Plutonium 238	13981-16-3	0	0.069	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0.035	0.069	0.27	1.0	U	PU

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

QC-BLANK 45094

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7528
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2242
Contract No. 630

Lab sample id R305191-05
Dept sample id 7528-005

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	12.7	0.43	0.29	400		H	13.0	0.52	98	83-117	80-120
Carbon 14	1810	36	8.0	50		C	1870	75	97	84-116	80-120
Nickel 63	220	4.5	2.3	30		NI_L	228	9.1	96	84-116	80-120
Total Strontium	22.6	0.99	0.34	1.0		SR	21.0	0.84	108	81-119	80-120
Technetium 99	112	3.9	0.53	15	B	TC	109	4.4	103	83-117	80-120
Thorium 230	45.7	4.6	0.29	1.0		TH	40.8	1.6	112	80-120	80-120
Total Uranium (ug/g)	16.7	2.0	0.037	1.0		U_T	16.5	0.66	101	76-124	80-120
Uranium 233/234	22.2	2.2	0.95	1.0		U	18.6	0.74	119	79-121	80-120
Uranium 235	15.5	1.7	0.23	1.0		U	15.1	0.60	103	81-119	80-120
Uranium 238	22.1	2.2	0.91	1.0		U	20.2	0.81	109	81-119	80-120
Neptunium 237	14.8	1.6	0.081	1.0		NP	19.9	0.80	74	85-115	80-120
Americium 241	18.0	2.0	0.23	1.0		AM	19.0	0.76	95	82-118	80-120
Iodine 129	116	0.89	1.0	2.0		I	116	4.6	100	84-116	80-120
Cobalt 60	7.83	0.42	0.26	0.050		GAM	7.47	0.30	105	74-126	80-120
Cesium 137	8.18	0.39	0.30	0.10		GAM	7.34	0.29	111	73-127	80-120

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

QC-LCS #44883

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-009

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7528
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2242
Contract No. 630

Lab sample id R305191-09
Dept sample id 7528-009

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
Plutonium 238	26.9	3.4	0.34	1.0		PU	26.8	1.1	100	79-121	80-120
Plutonium 239/240	29.2	3.6	0.34	1.0		PU	29.0	1.2	101	79-121	80-120

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

QC-LCS 45093

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-007

B17115

DUPLICATE

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R305191-07	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-007	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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	139	1.4	0.30	400		H	145	1.5	0.31		4	21
Carbon 14	0.411	1.3	2.2	50	U	C	1.58	1.5	2.5	U	-	
Nickel 63	-1.37	1.3	2.2	30	U	NI_L	-1.22	1.3	2.3	U	-	
Total Strontium	0.717	0.20	0.25	1.0		SR	0.637	0.20	0.27		12	66
Technetium 99	0.789	0.21	0.56	15	B	TC	0.791	0.25	0.48	B	0	66
Thorium 228	0.808	0.39	0.29			TH	0.858	0.20	0.093		6	80
Thorium 230	1.69	0.56	0.29	1.0		TH	0.702	0.20	0.21		83	75
Thorium 232	0.768	0.31	0.29	1.0		TH	0.507	0.14	0.075		41	81
Total Uranium (ug/g)	1.04	0.12	0.004	1.0		U_T	1.04	0.12	0.004		0	31
Uranium 233/234	0.766	0.27	0.17	1.0		U	1.04	0.35	0.19		30	74
Uranium 235	0.106	0.11	0.20	1.0	U	U	0.120	0.12	0.23	U	-	
Uranium 238	0.657	0.22	0.17	1.0		U	0.666	0.25	0.19		1	76
Neptunium 237	0.102	0.082	0.061	1.0		NP	0.052	0.052	0.078	U	65	190
Americium 241	1130	210	0.61	1.0		AM	1320	340	0.58		16	50
Iodine 129	3.85	0.49	0.96	2.0		I	3.41	0.83	1.8		12	45
Potassium 40	24.8	2.1	1.2			GAM	27.2	3.4	2.1		9	39
Cobalt 60	U		0.12	0.050	U	GAM	U		0.22	U	-	
Tin 126	U		0.71		U	GAM	U		1.1	U	-	
Cesium 134	U		0.16		U	GAM	U		0.24	U	-	
Cesium 137	1060	3.0	0.61	0.10		GAM	1080	4.0	1.3		2	32
Radium 226	U		1.4		U	GAM	U		1.7	U	-	
Radium 228	U		1.6		U	GAM	U		1.3	U	-	
Europium 152	U		2.1	0.10	U	GAM	U		3.2	U	-	
Europium 154	U		0.38	0.10	U	GAM	U		0.63	U	-	
Europium 155	U		1.2	0.10	U	GAM	U		1.9	U	-	
Thorium 228	U		1.5		U	GAM	U		1.6	U	-	
Thorium 232	U		1.6		U	GAM	U		1.3	U	-	
Uranium 235	U		2.0		U	GAM	U		3.3	U	-	

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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-007

B17115

DUPLICATE, cont.

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R305191-07	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-007	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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
Uranium 238	U		12		U	GAM	U		24	U	-		
Americium 241	974	3.2	1.7			GAM	1070	4.0	2.3		9	32	

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

QC-DUP#2 44885

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-011 B17115

DUPLICATE

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R305191-11	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-011	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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
Plutonium 238	282	63	25	1.0		PU	316	71	25		11	49
Plutonium 239/240	6620	620	25	1.0		PU	7110	650	25		7	22

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

QC-DUP#2A1 45095

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-008 B17115

MATRIX SPIKE

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
MATRIX SPIKE		ORIGINAL			
Lab sample id	R305191-08	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-008	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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	196	2.0	0.37	400	X	H	50.6	2.0	145	1.5	101	27-173	60-140

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

QC-MS#2 44886

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-001 B17124

DATA SHEET

SDG	7528	Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R305191-01	Client sample id	B17124
Dept sample id	7528-001	Location/Matrix	216-A-10 (C3247) SOLID
Received	05/29/03	Collected/Weight	05/20/03 09:45 185.0 g
% solids	87.2	Custody/SAF No	F03-006-106 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	319	3.2	0.48	400		H
Carbon 14	14762-75-5	0.950	1.4	2.3	50	U	C
Nickel 63	13981-37-8	-0.546	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	0.614	0.20	0.27	1.0		SR
Technetium 99	14133-76-7	0.796	0.22	0.56	15	B	TC
Thorium 228	14274-82-9	0.484	0.14	0.094			TH
Thorium 230	14269-63-7	0.008	0.12	0.27	1.0	U	TH
Thorium 232	TH-232	0.526	0.14	0.065	1.0		TH
Total Uranium (ug/g)	7440-61-1	1.65	0.18	0.004	1.0		U_T
Uranium 233/234	U-233/234	1.01	0.33	0.18	1.0		U
Uranium 235	15117-96-1	0.227	0.17	0.22	1.0		U
Uranium 238	U-238	0.703	0.28	0.18	1.0		U
Neptunium 237	13994-20-2	0.032	0.064	0.096	1.0	U	NP
Plutonium 238	13981-16-3	132	42	26	1.0		PU
Plutonium 239/240	PU-239/240	3120	330	26	1.0		PU
Americium 241	14596-10-2	738	190	0.53	1.0		AM
Iodine 129	15046-84-1	10.3	0.90	1.7	2.0		I
Potassium 40	13966-00-2	19.6	3.4	2.1			GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Tin 126	15832-50-5	U		0.85		U	GAM
Cesium 134	13967-70-9	U		0.26		U	GAM
Cesium 137	10045-97-3	488	3.1	0.93	0.10		GAM
Radium 226	13982-63-3	U		1.8		U	GAM
Radium 228	15262-20-1	U		1.7		U	GAM
Europium 152	14683-23-9	U		2.6	0.10	U	GAM
Europium 154	15585-10-1	U		0.62	0.10	U	GAM
Europium 155	14391-16-3	U		1.5	0.10	U	GAM
Thorium 228	14274-82-9	U		1.0		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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-001 B17124

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-01	Client sample id	B17124		
Dept sample id	7528-001	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/29/03	Collected/Weight	05/20/03 09:45	185.0 g	
% solids	87.2	Custody/SAF No	F03-006-106	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	TH-232	U		1.7		U	GAM
Uranium 235	15117-96-1	U		2.3		U	GAM
Uranium 238	U-238	U		22		U	GAM
Americium 241	14596-10-2	490	3.2	1.8			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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-002 B17115

DATA SHEET

SDG	7528	Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	Custody/SAF No	F03-006-106 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	145	1.5	0.31	400		H
Carbon 14	14762-75-5	1.58	1.5	2.5	50	U	C
Nickel 63	13981-37-8	-1.22	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.637	0.20	0.27	1.0		SR
Technetium 99	14133-76-7	0.791	0.25	0.48	15	B	TC
Thorium 228	14274-82-9	0.858	0.20	0.093			TH
Thorium 230	14269-63-7	0.702	0.20	0.21	1.0		TH
Thorium 232	TH-232	0.507	0.14	0.075	1.0		TH
Total Uranium (ug/g)	7440-61-1	1.04	0.12	0.004	1.0		U_T
Uranium 233/234	U-233/234	1.04	0.35	0.19	1.0		U
Uranium 235	15117-96-1	0.120	0.12	0.23	1.0	U	U
Uranium 238	U-238	0.666	0.25	0.19	1.0		U
Neptunium 237	13994-20-2	0.052	0.052	0.078	1.0	U	NP
Plutonium 238	13981-16-3	316	71	25	1.0		PU
Plutonium 239/240	PU-239/240	7110	650	25	1.0		PU
Americium 241	14596-10-2	1320	340	0.58	1.0		AM
Iodine 129	15046-84-1	3.41	0.83	1.8	2.0		I
Potassium 40	13966-00-2	27.2	3.4	2.1			GAM
Cobalt 60	10198-40-0	U		0.22	0.050	U	GAM
Tin 126	15832-50-5	U		1.1		U	GAM
Cesium 134	13967-70-9	U		0.24		U	GAM
Cesium 137	10045-97-3	1080	4.0	1.3	0.10		GAM
Radium 226	13982-63-3	U		1.7		U	GAM
Radium 228	15262-20-1	U		1.3		U	GAM
Europium 152	14683-23-9	U		3.2	0.10	U	GAM
Europium 154	15585-10-1	U		0.63	0.10	U	GAM
Europium 155	14391-16-3	U		1.9	0.10	U	GAM
Thorium 228	14274-82-9	U		1.6		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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-002 B17115

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-02	Client sample id	B17115		
Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/29/03	Collected/Weight	05/20/03 08:30	159.7 g	
% solids	88.1	Custody/SAF No	F03-006-106	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	TH-232	U		1.3		U	GAM
Uranium 235	15117-96-1	U		3.3		U	GAM
Uranium 238	U-238	U		24		U	GAM
Americium 241	14596-10-2	1070	4.0	2.3			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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-003 B17116

DATA SHEET

SDG	7528	Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R305191-03	Client sample id	B17116
Dept sample id	7528-003	Location/Matrix	216-A-10 (C3247) SOLID
Received	05/30/03	Collected/Weight	05/27/03 10:30 209.3 g
% solids	90.9	Custody/SAF No	F03-006-107 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	134	1.4	0.30	400		H
Carbon 14	14762-75-5	0.356	1.3	2.2	50	U	C
Nickel 63	13981-37-8	-0.994	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	11.1	0.59	0.24	1.0		SR
Technetium 99	14133-76-7	0.785	0.21	0.55	15	B	TC
Thorium 228	14274-82-9	0.572	0.15	0.091			TH
Thorium 230	14269-63-7	0.581	0.17	0.22	1.0		TH
Thorium 232	TH-232	0.353	0.12	0.073	1.0		TH
Total Uranium (ug/g)	7440-61-1	2.78	0.32	0.004	1.0		U_T
Uranium 233/234	U-233/234	1.39	0.41	0.19	1.0		U
Uranium 235	15117-96-1	0.150	0.12	0.23	1.0	U	U
Uranium 238	U-238	1.22	0.36	0.19	1.0		U
Neptunium 237	13994-20-2	0.132	0.11	0.079	1.0		NP
Plutonium 238	13981-16-3	0.070	0.070	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0.805	0.36	0.27	1.0		PU
Americium 241	14596-10-2	70.6	6.5	0.28	1.0		AM
Iodine 129	15046-84-1	4.40	0.84	1.7	2.0		I
Potassium 40	13966-00-2	22.8	1.4	0.61			GAM
Cobalt 60	10198-40-0	U		0.069	0.050	U	GAM
Tin 126	15832-50-5	U		0.30		U	GAM
Cesium 134	13967-70-9	U		0.092		U	GAM
Cesium 137	10045-97-3	294	1.0	0.25	0.10		GAM
Radium 226	13982-63-3	U		0.75		U	GAM
Radium 228	15262-20-1	1.06	0.26	0.26			GAM
Europium 152	14683-23-9	U		0.85	0.10	U	GAM
Europium 154	15585-10-1	U		0.41	0.10	U	GAM
Europium 155	14391-16-3	U		0.49	0.10	U	GAM
Thorium 228	14274-82-9	0.860	0.26	0.38			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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-003 B17116

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-03	Client sample id	B17116		
Dept sample id	7528-003	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/30/03	Collected/Weight	05/27/03 10:30	209.3 g	
% solids	90.9	Custody/SAF No	F03-006-107	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	TH-232	1.06	0.26	0.26			GAM
Uranium 235	15117-96-1	U		0.83		U	GAM
Uranium 238	U-238	U		9.7		U	GAM
Americium 241	14596-10-2	108	0.80	0.61			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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-004 B17123

DATA SHEET

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-04	Client sample id	B17123		
Dept sample id	7528-004	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/30/03	Collected/Weight	05/27/03 10:30	230.6 g	
% solids	90.3	Custody/SAF No	F03-006-107	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	160	1.6	0.33	400		H
Carbon 14	14762-75-5	1.44	1.3	2.2	50	U	C
Nickel 63	13981-37-8	0.299	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	5.23	0.43	0.26	1.0		SR
Technetium 99	14133-76-7	1.03	0.23	0.54	15	B	TC
Thorium 228	14274-82-9	0.454	0.22	0.20			TH
Thorium 230	14269-63-7	0.959	0.33	0.20	1.0		TH
Thorium 232	TH-232	0.479	0.22	0.20	1.0		TH
Total Uranium (ug/g)	7440-61-1	2.64	0.30	0.004	1.0		U_T
Uranium 233/234	U-233/234	0.938	0.29	0.18	1.0		U
Uranium 235	15117-96-1	0.114	0.11	0.22	1.0	U	U
Uranium 238	U-238	0.891	0.29	0.18	1.0		U
Neptunium 237	13994-20-2	-0.040	0.079	0.30	1.0	U	NP
Plutonium 238	13981-16-3	0	0.33	1.2	1.0	U	PU
Plutonium 239/240	PU-239/240	0.976	0.66	1.2	1.0	U	PU
Americium 241	14596-10-2	78.8	7.0	0.26	1.0		AM
Iodine 129	15046-84-1	5.17	0.68	1.4	2.0		I
Potassium 40	13966-00-2	21.1	0.82	0.38			GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U	GAM
Tin 126	15832-50-5	U		0.19		U	GAM
Cesium 134	13967-70-9	U		0.053		U	GAM
Cesium 137	10045-97-3	347	0.70	0.16	0.10		GAM
Radium 226	13982-63-3	0.516	0.19	0.25			GAM
Radium 228	15262-20-1	0.984	0.20	0.18			GAM
Europium 152	14683-23-9	U		0.56	0.10	U	GAM
Europium 154	15585-10-1	0.200	0.12	0.14	0.10		GAM
Europium 155	14391-16-3	U		0.32	0.10	U	GAM
Thorium 228	14274-82-9	0.633	0.19	0.27			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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-004 B17123

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-04	Client sample id	B17123		
Dept sample id	7528-004	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/30/03	Collected/Weight	05/27/03 10:30	230.6 g	
% solids	90.3	Custody/SAF No	F03-006-107	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	TH-232	0.984	0.20	0.18			GAM
Uranium 235	15117-96-1	U		0.54		U	GAM
Uranium 238	U-238	U		5.2		U	GAM
Americium 241	14596-10-2	102	0.60	0.60			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	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test AM Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241
Preparation batch 7071-037					
R305191-01		R1	7528-001	B17124	738
R305191-02		R1	7528-002	B17115	1320
R305191-03			7528-003	B17116	70.6
R305191-04			7528-004	B17123	78.8
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07		R1	7528-007	Duplicate (R305191-02)	ok
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 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01		R1	B17124	0.53	0.500			36		109			48	07/02/03	07/07	SS-051
R305191-02		R1	B17115	0.58	0.500			31		109			48	07/02/03	07/07	SS-052
R305191-03			B17116	0.28	0.500			72		101			36	07/02/03	07/02	SS-042
R305191-04			B17123	0.26	0.500			65		134			36	07/02/03	07/02	SS-063
R305191-05			LCS (QC ID=44883)	0.23	0.500			65		135				07/02/03	07/02	SS-064
R305191-06			BLK (QC ID=44884)	0.20	0.500			75		135				07/02/03	07/02	SS-065
R305191-07		R1	Duplicate (R305191-02) (QC ID=44885)	0.61	0.500			32		110			48	07/02/03	07/07	SS-056
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test AM	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	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	MDA	0.38	±	0.36
FOR 7 SAMPLES	YIELD	54	±	40

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test NP Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Neptunium 237
Preparation batch 7071-037					
R305191-01			7528-001	B17124	U
R305191-02			7528-002	B17115	U
R305191-03			7528-003	B17116	0.132
R305191-04			7528-004	B17123	U
R305191-05			7528-005	LCS (QC ID=44883)	LOW
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	ok
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 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	0.096	0.500			65		130			37	06/26/03	06/26	SS-059
R305191-02			B17115	0.078	0.500			74		130			37	06/26/03	06/26	SS-060
R305191-03			B17116	0.079	0.500			76		130			30	06/26/03	06/26	SS-061
R305191-04			B17123	0.30	0.500			51		131			30	06/26/03	06/26	SS-062
R305191-05			LCS (QC ID=44883)	0.081	0.500			58		170				06/26/03	06/27	SS-059
R305191-06			BLK (QC ID=44884)	0.060	0.500			73		170				06/26/03	06/27	SS-060
R305191-07			Duplicate (R305191-02) (QC ID=44853)	0.061	0.500			75		170			38	06/26/03	06/27	SS-061
Nominal values and limits from method				1.0	0.500			20-105		100			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test NP	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.11	±	0.17
FOR 7 SAMPLES	YIELD	67	±	19

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test PU Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7071-037						
R305191-01		A1	7528-001	B17124	132	3120
R305191-02		A1	7528-002	B17115	316	7110
R305191-03		A1	7528-003	B17116	U	0.805
R305191-04		A1	7528-004	B17123	U	U
R305191-09			7528-009	LCS (QC ID=45093)	ok	ok
R305191-10			7528-010	BLK (QC ID=45094)	U	U
R305191-11			7528-011	Duplicate (R305191-02)	ok	ok
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 7071-037			2σ prep error 5.0 %	Reference Lab Notebook 7071 pg. 037												
R305191-01		A1	B17124	26	0.0050			80		101			58	07/17/03	07/17	SS-059
R305191-02		A1	B17115	25	0.0050			81		101			58	07/17/03	07/17	SS-060
R305191-03		A1	B17116	0.27	0.500			78		101			51	07/17/03	07/17	SS-061
R305191-04		A1	B17123	1.2	0.100			83		101			51	07/17/03	07/17	SS-062
R305191-09			LCS (QC ID=45093)	0.34	0.500			67		102				07/17/03	07/17	SS-063
R305191-10			BLK (QC ID=45094)	0.27	0.500			77		102				07/17/03	07/17	SS-064
R305191-11			Duplicate (R305191-02) (QC ID=45095)	25	0.0050			82		102			58	07/17/03	07/17	SS-065
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test	PU
Matrix	SOLID
SDG	7528
Contact	Melissa C. Mannion

LAB METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H2242

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	11	±	27
FOR 7 SAMPLES	YIELD	78	±	11

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test TH Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 7071-037					
R305191-01			7528-001	B17124	U
R305191-02			7528-002	B17115	0.702
R305191-03			7528-003	B17116	0.581
R305191-04			7528-004	B17123	0.959
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	OUT
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	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 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	0.27	0.250			97		609			51	07/09/03	07/10	SS-028
R305191-02			B17115	0.21	0.250			86		609			51	07/09/03	07/10	SS-029
R305191-03			B17116	0.22	0.250			91		611			44	07/09/03	07/10	SS-042
R305191-04			B17123	0.20	0.250			98		218			45	07/09/03	07/11	SS-058
R305191-05			LCS (QC ID=44883)	0.29	0.250			82		166				07/09/03	07/10	SS-029
R305191-06			BLK (QC ID=44884)	0.31	0.250			100		166				07/09/03	07/10	SS-035
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.29	0.250			84		166			51	07/09/03	07/10	SS-036
Nominal values and limits from method				1.0	0.250			20-105		150			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test TH	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.26	±	0.089
FOR 7 SAMPLES	YIELD	91	±	15

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

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 7071-037											
R305191-01			7528-001	B17124	1.01	0.227	0.703	144	74	32	27
R305191-02			7528-002	B17115	1.04	U	0.666	156	79	18	19
R305191-03			7528-003	B17116	1.39	U	1.22	114	48	12	10
R305191-04			7528-004	B17123	0.938	U	0.891	105	47	13	13
R305191-05			7528-005	LCS (QC ID=44883)	ok	ok	ok				
R305191-06			7528-006	BLK (QC ID=44884)	U	U	U				
R305191-07			7528-007	Duplicate (R305191-02)	ok	- U	ok	117	57	16	18
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 127		18	

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 7071-037			2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	0.22	0.500			87		125			51	07/08/03	07/10	SS-029
R305191-02			B17115	0.23	0.500			94		123			51	07/08/03	07/10	SS-065
R305191-03			B17116	0.23	0.500			93		123			44	07/08/03	07/10	SS-066
R305191-04			B17123	0.22	0.500			94		129			42	07/08/03	07/08	SS-058
R305191-05			LCS (QC ID=44883)	0.95	0.500			86		128				07/08/03	07/08	SS-059
R305191-06			BLK (QC ID=44884)	0.20	0.500			98		128				07/08/03	07/08	SS-060
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.20	0.500			98		128			49	07/08/03	07/08	SS-061
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	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	MDA	0.32	±	0.55
FOR 7 SAMPLES	YIELD	93	±	10

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test SR Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7071-037					
R305191-01			7528-001	B17124	0.614
R305191-02			7528-002	B17115	0.637
R305191-03			7528-003	B17116	11.1
R305191-04			7528-004	B17123	5.23
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	ok
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 7071-037 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	0.27	1.00			91		100			41	06/30/03	06/30	GRB-201
R305191-02			B17115	0.27	1.00			88		100			41	06/30/03	06/30	GRB-202
R305191-03			B17116	0.24	1.00			97		100			34	06/30/03	06/30	GRB-217
R305191-04			B17123	0.26	1.00			96		100			34	06/30/03	06/30	GRB-204
R305191-05			LCS (QC ID=44883)	0.34	1.00			75		100				06/30/03	06/30	GRB-229
R305191-06			BLK (QC ID=44884)	0.29	1.00			79		100				06/30/03	06/30	GRB-218
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.25	1.00			91		100			41	06/30/03	06/30	GRB-219
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-381	Strontium in Solids, rev 1

AVERAGES ± 2 SD FOR 7 SAMPLES	MDA	0.27	±	0.066
	YIELD	88	±	17

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test TC Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99
Preparation batch 7071-037					
R305191-01			7528-001	B17124	0.796
R305191-02			7528-002	B17115	0.791
R305191-03			7528-003	B17116	0.785
R305191-04			7528-004	B17123	1.03
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	0.773
R305191-07			7528-007	Duplicate (R305191-02)	ok
Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil				RDLs (pCi/g)	15

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	0.56	1.02			89		50			41	06/26/03	06/30	GRB-221
R305191-02			B17115	0.48	1.03			88		65			40	06/26/03	06/29	GRB-224
R305191-03			B17116	0.55	1.03			92		50			34	06/26/03	06/30	GRB-223
R305191-04			B17123	0.54	1.04			90		50			34	06/26/03	06/30	GRB-224
R305191-05			LCS (QC ID=44883)	0.53	1.00			90		55				06/26/03	07/01	GRB-221
R305191-06			BLK (QC ID=44884)	0.53	1.00			96		50				06/26/03	07/01	GRB-203
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.56	1.03			90		50			41	06/26/03	06/30	GRB-230
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test	TC
Matrix	SOLID
SDG	7528
Contact	Melissa C. Mannion

LAB METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H2242

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 2
	CP-002	Q.C. Preparation, rev 4
	CP-003	Addition of Carriers and Tracers, rev 5
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.54	±	0.055
FOR 7 SAMPLES	YIELD	91	±	5

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test GAM Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 7071-037						
R305191-01			7528-001	B17124	U	488
R305191-02			7528-002	B17115	U	1080
R305191-03			7528-003	B17116	U	294
R305191-04			7528-004	B17123	U	347
R305191-05			7528-005	LCS (QC ID=44883)	ok	ok
R305191-06			7528-006	BLK (QC ID=44884)	U	U
R305191-07			7528-007	Duplicate (R305191-02)	- U	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10

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

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 15.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	7.2	45.2					234			31	06/13/03	06/20	PD,03,00
R305191-02			B17115	9.3	31.6					407			32	06/13/03	06/21	PD,03,00
R305191-03			B17116	1.9	62.6					407			25	06/13/03	06/21	PD,04,00
R305191-04			B17123	1.2	61.0					1148			25	06/13/03	06/21	PD,04,00
R305191-05			LCS (QC ID=44883)	0.26	31.6					408				06/13/03	06/21	PD,07,00
R305191-06			BLK (QC ID=44884)	0.98	31.6					1150				06/13/03	06/21	PD,07,00
R305191-07			Duplicate (R305191-02) (QC ID=44885)	4.7	31.6					440			33	06/13/03	06/22	PD,04,00
Nominal values and limits from method				0.050	31.6					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 4
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 3.6 ± 7.0
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test I Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129
Preparation batch 7071-037					
R305191-01			7528-001	B17124	10.3
R305191-02			7528-002	B17115	3.41
R305191-03			7528-003	B17116	4.40
R305191-04			7528-004	B17123	5.17
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	ok
Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil				RDLs (pCi/g)	2.0

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 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	1.7	1.01			49		606			43	07/02/03	07/02	XSPEC-004
R305191-02			B17115	1.8	1.02			41		731			43	07/02/03	07/02	XSPEC-004
R305191-03			B17116	1.7	1.04			43		621			37	07/02/03	07/03	XSPEC-004
R305191-04			B17123	1.4	1.00			45		1109			37	07/02/03	07/03	XSPEC-004
R305191-05			LCS (QC ID=44883)	1.0	1.00			92		1503				07/02/03	07/04	XSPEC-004
R305191-06			BLK (QC ID=44884)	0.58	1.00			93		1493				07/02/03	07/05	XSPEC-004
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.96	1.02			57		758			47	07/02/03	07/06	XSPEC-004
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 7 SAMPLES
MDA 1.3 ± 0.93
YIELD 60 ± 46

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U T Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Uranium
Preparation batch 7071-037					
R305191-01			7528-001	B17124	1.65
R305191-02			7528-002	B17115	1.04
R305191-03			7528-003	B17116	2.78
R305191-04			7528-004	B17123	2.64
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	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 7071-037			2σ prep error 9.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	0.004	0.100								30	06/19/03	06/19	KPA-001
R305191-02			B17115	0.004	0.100								30	06/19/03	06/19	KPA-001
R305191-03			B17116	0.004	0.100								23	06/19/03	06/19	KPA-001
R305191-04			B17123	0.004	0.100								23	06/19/03	06/19	KPA-001
R305191-05			LCS (QC ID=44883)	0.037	0.100									06/19/03	06/19	KPA-001
R305191-06			BLK (QC ID=44884)	0.004	0.100									06/19/03	06/19	KPA-001
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.004	0.100								30	06/19/03	06/19	KPA-001
Nominal values and limits from method				1.0	0.100								180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U T	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY (KPA)

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	UTOT_KPA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 4
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5

AVERAGES ± 2 SD	MDA	0.009 ± 0.025
FOR 7 SAMPLES	YIELD	±

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test C Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 7071-037						
R305191-01			7528-001	B17124	U	
R305191-02			7528-002	B17115	U	
R305191-03			7528-003	B17116	U	
R305191-04			7528-004	B17123	U	
R305191-05			7528-005	LCS (QC ID=44883)	ok	
R305191-06			7528-006	BLK (QC ID=44884)	U	
R305191-07			7528-007	Duplicate (R305191-02)	-	U
Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil				RDLs (pCi/g)	50	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	2.3	0.372			100		100			52	07/07/03	07/11	LSC-005
R305191-02			B17115	2.5	0.341			100		100			52	07/07/03	07/11	LSC-005
R305191-03			B17116	2.2	0.375			100		100			45	07/07/03	07/11	LSC-005
R305191-04			B17123	2.2	0.389			100		100			45	07/07/03	07/11	LSC-005
R305191-05			LCS (QC ID=44883)	8.0	0.341			100		10				07/07/03	07/12	LSC-005
R305191-06			BLK (QC ID=44884)	2.6	0.341			100		100				07/07/03	07/11	LSC-005
R305191-07			Duplicate (R305191-02) (QC ID=44885)	2.2	0.398			100		100			52	07/07/03	07/11	LSC-005
Nominal values and limits from method				50	0.341					50			180			

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

AVERAGES ± 2 SD MDA 3.1 ± 4.3
FOR 7 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test H Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7071-037						
R305191-01			7528-001	B17124	319	
R305191-02			7528-002	B17115	145	
R305191-03			7528-003	B17116	134	
R305191-04			7528-004	B17123	160	
R305191-05			7528-005	LCS (QC ID=44883)	ok	
R305191-06			7528-006	BLK (QC ID=44884)	U	
R305191-07			7528-007	Duplicate (R305191-02)	ok	
R305191-08			7528-008	Spike (R305191-02)	ok	X

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

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	0.48	20.7			32		47			34	06/23/03	06/23	LSC-005
R305191-02			B17115	0.31	20.7			33		102			34	06/23/03	06/23	LSC-005
R305191-03			B17116	0.30	21.1			32		108			27	06/23/03	06/23	LSC-005
R305191-04			B17123	0.33	20.9			33		91			27	06/23/03	06/23	LSC-005
R305191-05			LCS (QC ID=44883)	0.29	20.0			33		120				06/23/03	06/23	LSC-005
R305191-06			BLK (QC ID=44884)	0.29	20.0			33		120				06/23/03	06/24	LSC-005
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.30	20.5			34		101			35	06/23/03	06/24	LSC-005
R305191-08			Spike (R305191-02) (QC ID=44886)	0.37	20.5			32		76			35	06/23/03	06/24	LSC-005
Nominal values and limits from method				400	20.0					25			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test H	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 6

AVERAGES ± 2 SD	MDA	0.33	±	0.13
FOR 8 SAMPLES	YIELD	33	±	1

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/22/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test NI_L Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7071-037						
R305191-01			7528-001	B17124	U	
R305191-02			7528-002	B17115	U	
R305191-03			7528-003	B17116	U	
R305191-04			7528-004	B17123	U	
R305191-05			7528-005	LCS (QC ID=44883)	ok	
R305191-06			7528-006	BLK (QC ID=44884)	U	
R305191-07			7528-007	Duplicate (R305191-02)	-	U

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

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	2.4	0.500			84		100			37	06/26/03	06/26	LSC-006
R305191-02			B17115	2.3	0.500			87		100			37	06/26/03	06/26	LSC-006
R305191-03			B17116	2.3	0.500			89		100			30	06/26/03	06/26	LSC-006
R305191-04			B17123	2.3	0.500			89		100			30	06/26/03	06/26	LSC-006
R305191-05			LCS (QC ID=44883)	2.3	0.500			87		100				06/26/03	06/27	LSC-006
R305191-06			BLK (QC ID=44884)	2.4	0.500			87		100				06/26/03	06/27	LSC-006
R305191-07			Duplicate (R305191-02) (QC ID=44885)	2.2	0.500			90		100			38	06/26/03	06/27	LSC-006
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	
	NI63_LSC	
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-280	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 2.3 ± 0.14
YIELD 88 ± 4

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

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 7528
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

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 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

MATRIX SPIKE

for the recovery.

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

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

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/22/03

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	F03-006-106	Page 1 of 1

Collector: Johansen/Pope/Pfister H2242 (7528)	Company Contact: LC Hulstrom	Telephone No.: 373-3928 H2242 (7528)	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: 05-20-03 216-A-10 (C3247) ~~52.5-55 ft~~ 52.5' - 54'-56'	SAF No.: F03-006	
Ice Chest No.: ERC 99 022	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A030268	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A 5-22-03 Radioactive B17131 TEDO: B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time								
~~B17115~~	~~SOIL~~	~~5-20-03~~	~~0830~~								
B17124	SOIL	5-20-03	0945				52803			X	X	X
										X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From [illegible]	5/20/03 1317	Received By/Stored In HO-64-427 REF	5/20/03 1317
Relinquished By/Removed From HO-64-427 REF	5/20/03 1120	Received By/Stored In [illegible]	5/20/03 1120
Relinquished By/Removed From [illegible]	5/20/03 1150	Received By/Stored In REF 1A 52203	1150
Relinquished By/Removed From REF 1A 52803	0800	Received By/Stored In SJGALE	52803 0800
Relinquished By/Removed From SJGALE	52803 0800	Received By/Stored In FED EX	
Relinquished By/Removed From FED EX		Received By/Stored In [illegible]	5-28-03 100

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ~~** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.~~ 5/20/03

~~(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}~~
~~(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {2-Butoxyethanol; Tributyl phosphate}; TPH Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-G.~~
~~(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)~~
~~(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010~~
(5) 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
(6) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DI=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	F03-006-106	Page 1 of 1
Collector: Johansen/Pope/Pfister H2242 (7528)	Company Contact: LC Hulstrom; Telephone No.: 373-3928 H2242 (7528)	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: 216-A-10 (C3247) ~~52.5-55 ft~~ 5-20-03 5254' 54'-56'	SAF No.: F03-006	
Ice Chest No.: ERC 96 009	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: RSR 107188	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A 5-22-03 Radioactive TICTO: B17131 B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions. N/A	Chromium Hex - 7196 5/21/03	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time									
B17115	SOIL	5-20-03	0830							X	X	X
~~B17124~~	~~SOIL~~	~~5-20-03~~	~~0945~~			~~N/A~~ 52803				~~X~~	~~X~~	~~X~~

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	5/20/03 1317	HO-64-427 Ref	5/20/03 1317
HO-64-427 Ref	5/22/03 1120	[signature]	5/22/03 1120
[signature]	5/23/03 1150	Ref 1A 52203	1150
Ref 1A 52803	0800	S Gale	52803 0800
S Gale	52803 0800	FED EX	
FED EX		[signature]	5-29-03 1000

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ~~** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.~~ 5/20/03

~~(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)~~
~~(2) Semi-VOA - 8270A (PCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-G.~~
~~(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)~~
~~(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.2; pH (Soil) - 9045; Total Cyanide - 9010~~
(5) 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
(6) Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

5/20/03

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	F03-006-107	Page 1 of 1

Collector Johansen/Pope/Pfister H2242 (7528)	**Company Contact** LC Hulstrom	**Telephone No.** 373-3928	**Project Coordinator** TRENT, SJ
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	**Sampling Location** 216-A-10 (C3247) 62.5-65 ft H2242 (7528)		**SAF No.** F03-006
Ice Chest No. ERC 99-508	**Field Logbook No.** HNF-N-3361	**COA** 117504ES10	**Method of Shipment** Federal Express
Shipped To EBERLINE SERVICES (Formerly TMA)	**Offsite Property No.** A030 269		**Bill of Lading/Air Bill No.** SEEOSPC

Price Code 8N **Data Turnaround** 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS TMS 5-27-03 N/A

Radiological Tie To: B17116 B17133; ~~B17134~~ RF 5-29-03

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

TMS 5-27-03

Sample No.	Matrix *	Sample Date	Sample Time									
B17116	SOIL	5-27-03	1030								X	X	X
B17123	Soil	5-27-03	1030								X	X	X
~~B17122 5-29-03~~	~~Soil~~	5-27-03	1110								~~X~~	~~X~~	~~X~~

TMS 5-27-03

TMS 5-27-03

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From FH Date/Time 5-27-03 1415	Received By/Stored In ERC Date/Time 5-27-03 1415	
Relinquished By/Removed From Date/Time 1415	Received By/Stored In Date/Time 1415	
Relinquished By/Removed From Date/Time 1000	Received By/Stored In Date/Time 1000	
Relinquished By/Removed From ERC Date/Time 1000	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) ~~Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)~~ ~~(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G~~ ~~(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)~~ ~~(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010~~ (5) 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 (6) Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
BE=Bulk Liquids
V=Vapor
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

ANALYTICAL SERVICES GROUP
Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-29-03

CoC No. F03-006-106

Container I.D. No. ERC-99-022 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: 1
7. Number of containers per sample: 3 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Samples are: Preserved [ ] Not preserved [✓] Preservative* _____
12. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 5-29-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B17124	240						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

EBERLINE SERVICES

ANALYTICAL SERVICES GROUP
Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-29-03

CoC No. F03-006-106

Container I.D. No. ERC-96-009 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: 1
7. Number of containers per sample: 3 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Samples are: Preserved [ ] Not preserved [✓] Preservative* _____
12. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 5-29-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B17115	240						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

EBERLINE SERVICES

ANALYTICAL SERVICES GROUP
Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-30-03

CoC No. F03-006-107

Container I.D. No. GRC-99-508 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: 3 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Samples are: Preserved [ ] Not preserved [✓] Preservative* _____
12. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 5-30-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B17116	240						
B17123	240						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

EBERLINE
SERVICES

July 17, 2003

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

Reference: **P.O. #630**
Eberline Services R3-05-191-7528, SDG H2242

Dear Mr. Trent:

Enclosed is the data report for four solid samples designated under SAF No. F03-006 received at Eberline Services on May 28, 29, and 30, 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
Program Manager

MCM

Enclosure: Data Package

JUL 2003
RECEIVED

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 H2242 was composed of four solid (soil) samples designated under SAF No. F03-006 with a Project Designations 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

There was contamination in the method blank (0.773 pCi/g). The activity was below the RDL for Tc-99 (15 pCi/g). The activity in the method blank is probably from a long-lived isotope in the tracer. No other problems were encountered during the course of the analyses.

2.6 Iodine-129 Analyses

No 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

The LCS percent recovery (74%) was below the laboratory protocol limits (80 to 120%), but was within the contract limits (70 to 130%). No other problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

The Pu samples were reanalyzed because samples B17124 and B17115 cross contaminated each other, and the other Pu samples. The data from the reanalysis of the Pu samples is reported herein. No problems were encountered during the course of the reanalyses.

2.12 Americium-241 Analyses

Due to Pu contamination in the Am-241 sample aliquots samples B17124, B17115, and the sample duplicate were reworked in chemistry to remove the contamination. The data from the rework of the samples are reported herein. No other 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

7/17/3
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 H2242

SDG	7528
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2242

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	10
Lab Control Samples	13
Duplicates	15
Matrix Spikes	18
Data Sheets	19
Method Summaries	27
Report Guides	48
End of Section	62

Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	07/17/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/17/03

SDG 7528
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2242

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R305191-01	B17124	216-A-10 (C3247)	SOLID		F03-006	F03-006-106	05/20/03 09:45
R305191-02	B17115	216-A-10 (C3247)	SOLID		F03-006	F03-006-106	05/20/03 08:30
R305191-03	B17116	216-A-10 (C3247)	SOLID		F03-006	F03-006-107	05/27/03 10:30
R305191-04	B17123	216-A-10 (C3247)	SOLID		F03-006	F03-006-107	05/27/03 10:30
R305191-05	Lab Control Sample		SOLID		F03-006		
R305191-06	Method Blank		SOLID		F03-006		
R305191-07	Duplicate (R305191-02)	216-A-10 (C3247)	SOLID		F03-006		05/20/03 08:30
R305191-08	Spike (R305191-02)	216-A-10 (C3247)	SOLID		F03-006		05/20/03 08:30
R305191-09	Lab Control Sample		SOLID		F03-006		
R305191-10	Method Blank		SOLID		F03-006		
R305191-11	Duplicate (R305191-02)	216-A-10 (C3247)	SOLID		F03-006		05/20/03 08:30

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

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
7528	F03-006-106	B17115	SOLID	88.1	159.7 g		05/29/03	9	R305191-02	7528-002
		B17124	SOLID	87.2	185.0 g		05/29/03	9	R305191-01	7528-001
	F03-006-107	B17116	SOLID	90.9	209.3 g		05/30/03	3	R305191-03	7528-003
		B17123	SOLID	90.3	230.6 g		05/30/03	3	R305191-04	7528-004
		Method Blank	SOLID						R305191-06	7528-006
		Method Blank	SOLID						R305191-10	7528-010
		Lab Control Sample	SOLID						R305191-05	7528-005
		Lab Control Sample	SOLID						R305191-09	7528-009
		Duplicate (R305191-02)	SOLID	88.1	159.7 g		05/29/03	9	R305191-07	7528-007
		Duplicate (R305191-02)	SOLID	88.1	159.7 g		05/29/03	9	R305191-11	7528-011
		Spike (R305191-02)	SOLID	88.1	159.7 g		05/29/03	9	R305191-08	7528-008

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7071-037	5.0	4			1	1	1/1		
NP	SOLID	Neptunium in Soil	7071-037	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7071-037	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7071-037	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7071-037	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7071-037	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7071-037	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7071-037	15.0	4			1	1	1/1		
I	SOLID	Iodine 129 in Soil	7071-037	10.0	4			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Soil	7071-037	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7071-037	10.0	4			1	1	1/1		
H	SOLID	Tritium in Soil	7071-037	10.0	4			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7071-037	10.0	4			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-01	B17124			7528-001	AM	R1	07/07/03	07/17/03	MCM	Americium 241 in Soil
05/20/03	216-A-10 (C3247)		SOLID	7528-001	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/29/03	F03-006-106	F03-006		7528-001	GAM		06/20/03	07/17/03	MCM	Gamma Scan
				7528-001	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-001	I		07/02/03	07/17/03	MCM	Iodine 129 in Soil
				7528-001	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-001	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-001	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-001	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-001	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-001	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-001	U		07/10/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-001	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-02	B17115			7528-002	AM	R1	07/07/03	07/17/03	MCM	Americium 241 in Soil
05/20/03	216-A-10 (C3247)		SOLID	7528-002	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/29/03	F03-006-106	F03-006		7528-002	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-002	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-002	I		07/02/03	07/17/03	MCM	Iodine 129 in Soil
				7528-002	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-002	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-002	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-002	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-002	TC		06/29/03	07/17/03	MCM	Technetium 99 in Soil
				7528-002	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-002	U		07/10/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-002	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-03	B17116			7528-003	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
05/27/03	216-A-10 (C3247)		SOLID	7528-003	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/30/03	F03-006-107	F03-006		7528-003	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-003	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-003	I		07/03/03	07/17/03	MCM	Iodine 129 in Soil
				7528-003	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-003	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-003	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-003	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-003	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-003	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-003	U		07/10/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-003	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-04	B17123			7528-004	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
05/27/03	216-A-10 (C3247)		SOLID	7528-004	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/30/03	F03-006-107	F03-006		7528-004	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-004	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-004	I		07/03/03	07/17/03	MCM	Iodine 129 in Soil
				7528-004	NI_L		06/26/03	07/17/03	MCM	Nickel 63 in Soil
				7528-004	NP		06/26/03	07/17/03	MCM	Neptunium in Soil
				7528-004	PU	A1	07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
				7528-004	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-004	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-004	TH		07/11/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-004	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-004	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-05	Lab Control Sample			7528-005	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
			SOLID	7528-005	C		07/12/03	07/17/03	MCM	Carbon 14 in Soil
		F03-006		7528-005	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-005	H		06/23/03	07/17/03	MCM	Tritium in Soil
				7528-005	I		07/04/03	07/17/03	MCM	Iodine 129 in Soil
				7528-005	NI_L		06/27/03	07/17/03	MCM	Nickel 63 in Soil
				7528-005	NP		06/27/03	07/17/03	MCM	Neptunium in Soil
				7528-005	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-005	TC		07/01/03	07/17/03	MCM	Technetium 99 in Soil
				7528-005	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-005	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-005	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-06	Method Blank			7528-006	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
			SOLID	7528-006	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
		F03-006		7528-006	GAM		06/21/03	07/17/03	MCM	Gamma Scan
				7528-006	H		06/24/03	07/17/03	MCM	Tritium in Soil
				7528-006	I		07/05/03	07/17/03	MCM	Iodine 129 in Soil
				7528-006	NI_L		06/27/03	07/17/03	MCM	Nickel 63 in Soil
				7528-006	NP		06/27/03	07/17/03	MCM	Neptunium in Soil
				7528-006	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-006	TC		07/01/03	07/17/03	MCM	Technetium 99 in Soil
				7528-006	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-006	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-006	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil
R305191-07	Duplicate (R305191-02)			7528-007	AM	R1	07/07/03	07/17/03	MCM	Americium 241 in Soil
05/20/03	216-A-10 (C3247)		SOLID	7528-007	C		07/11/03	07/17/03	MCM	Carbon 14 in Soil
05/29/03		F03-006		7528-007	GAM		06/22/03	07/17/03	MCM	Gamma Scan
				7528-007	H		06/24/03	07/17/03	MCM	Tritium in Soil
				7528-007	I		07/06/03	07/17/03	MCM	Iodine 129 in Soil
				7528-007	NI_L		06/27/03	07/17/03	MCM	Nickel 63 in Soil
				7528-007	NP		06/27/03	07/17/03	MCM	Neptunium in Soil
				7528-007	SR		06/30/03	07/17/03	MCM	Total Strontium in Soil
				7528-007	TC		06/30/03	07/17/03	MCM	Technetium 99 in Soil
				7528-007	TH		07/10/03	07/17/03	MCM	Thorium, Isotopic in Soil
				7528-007	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
				7528-007	U_T		06/19/03	07/17/03	MCM	Uranium, Total in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG 7528
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305191-08 05/20/03 05/29/03	Spike (R305191-02) 216-A-10 (C3247)	F03-006	SOLID	7528-008	H		06/24/03	07/17/03	MCM	Tritium in Soil
R305191-09	Lab Control Sample	F03-006	SOLID	7528-009	PU		07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
R305191-10	Method Blank	F03-006	SOLID	7528-010	PU		07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids
R305191-11 05/20/03 05/29/03	Duplicate (R305191-02) 216-A-10 (C3247)	F03-006	SOLID	7528-011	PU		07/17/03	07/17/03	MCM	Plutonium, Isotopic in Solids

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	4			1	1	1		7
C	F03-006	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1		7
GAM	F03-006	Gamma Scan	GAMMA_GS	4			1	1	1		7
H	F03-006	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
I	F03-006	Iodine 129 in Soil	I129_SEP_LEPS_GS	4			1	1	1		7
NI_L	F03-006	Nickel 63 in Soil	NI63_LSC	4			1	1	1		7
NP	F03-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	4			1	1	1		7
PU	F03-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1		7
SR	F03-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
TC	F03-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1		7
TH	F03-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	4			1	1	1		7
U	F03-006	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1		7
U_T	F03-006	Uranium, Total in Soil	UTOT_KPA	4			1	1	1		7
TOTALS				52			13	13	13	1	92

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-006 Method Blank

METHOD BLANK

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-06	Client sample id	Method Blank		
Dept sample id	7528-006	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	-0.096	0.17	0.29	400	U	H
Carbon 14	14762-75-5	-0.207	1.5	2.6	50	U	C
Nickel 63	13981-37-8	-1.08	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	-0.048	0.13	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.773	0.20	0.53	15		TC
Thorium 228	14274-82-9	0	0.066	0.25		U	TH
Thorium 230	14269-63-7	0.131	0.20	0.31	1.0	U	TH
Thorium 232	TH-232	0	0.066	0.25	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0	0.004	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.043	0.16	1.0	U	U
Uranium 235	15117-96-1	0	0.052	0.20	1.0	U	U
Uranium 238	U-238	0	0.043	0.16	1.0	U	U
Neptunium 237	13994-20-2	0	0.040	0.060	1.0	U	NP
Americium 241	14596-10-2	0	0.053	0.20	1.0	U	AM
Iodine 129	15046-84-1	-0.074	0.26	0.58	2.0	U	I
Potassium 40	13966-00-2	U		17		U	GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Cesium 137	10045-97-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	U		0.41		U	GAM
Radium 228	15262-20-1	U		0.57		U	GAM
Europium 152	14683-23-9	U		0.29	0.10	U	GAM
Europium 154	15585-10-1	U		0.35	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Thorium 228	14274-82-9	U		0.42		U	GAM
Thorium 232	TH-232	U		0.57		U	GAM
Uranium 235	15117-96-1	U		0.40		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.10		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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-006 **Method Blank**

BLANK, cont.

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-06	Client sample id	Method Blank		
Dept sample id	7528-006	Material/Matrix		SOLID	
		SAF No	F03-006		

QC-BLANK #44884

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-010 **Method Blank**

METHOD BLANK

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-10	Client sample id	Method Blank		
Dept sample id	7528-010	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
Plutonium 238	13981-16-3	0	0.069	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0.035	0.069	0.27	1.0	U	PU

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

QC-BLANK 45094

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7528
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2242
Contract No. 630

Lab sample id R305191-05
Dept sample id 7528-005

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	12.7	0.43	0.29	400		H	13.0	0.52	98	83-117	80-120
Carbon 14	1810	36	8.0	50		C	1870	75	97	84-116	80-120
Nickel 63	220	4.5	2.3	30		NI_L	228	9.1	96	84-116	80-120
Total Strontium	22.6	0.99	0.34	1.0		SR	21.0	0.84	108	81-119	80-120
Technetium 99	112	3.9	0.53	15	B	TC	109	4.4	103	83-117	80-120
Thorium 230	45.7	4.6	0.29	1.0		TH	40.8	1.6	112	80-120	80-120
Total Uranium (ug/g)	16.7	2.0	0.037	1.0		U_T	16.5	0.66	101	76-124	80-120
Uranium 233/234	22.2	2.2	0.95	1.0		U	18.6	0.74	119	79-121	80-120
Uranium 235	15.5	1.7	0.23	1.0		U	15.1	0.60	103	81-119	80-120
Uranium 238	22.1	2.2	0.91	1.0		U	20.2	0.81	109	81-119	80-120
Neptunium 237	14.8	1.6	0.081	1.0		NP	19.9	0.80	74	85-115	80-120
Americium 241	18.0	2.0	0.23	1.0		AM	19.0	0.76	95	82-118	80-120
Iodine 129	116	0.89	1.0	2.0		I	116	4.6	100	84-116	80-120
Cobalt 60	7.83	0.42	0.26	0.050		GAM	7.47	0.30	105	74-126	80-120
Cesium 137	8.18	0.39	0.30	0.10		GAM	7.34	0.29	111	73-127	80-120

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

QC-LCS #44883

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-009

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7528
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2242
Contract No. 630

Lab sample id R305191-09
Dept sample id 7528-009

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
Plutonium 238	26.9	3.4	0.34	1.0		PU	26.8	1.1	100	79-121	80-120
Plutonium 239/240	29.2	3.6	0.34	1.0		PU	29.0	1.2	101	79-121	80-120

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

QC-LCS 45093

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-007 B17115

DUPLICATE

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R305191-07	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-007	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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
Tritium	139	1.4	0.30	400		H	145	1.5	0.31		4	21	
Carbon 14	0.411	1.3	2.2	50	U	C	1.58	1.5	2.5	U	-		
Nickel 63	-1.37	1.3	2.2	30	U	NI_L	-1.22	1.3	2.3	U	-		
Total Strontium	0.717	0.20	0.25	1.0		SR	0.637	0.20	0.27		12	66	
Technetium 99	0.789	0.21	0.56	15	B	TC	0.791	0.25	0.48	B	0	66	
Thorium 228	0.808	0.39	0.29			TH	0.858	0.20	0.093		6	80	
Thorium 230	1.69	0.56	0.29	1.0		TH	0.702	0.20	0.21		83	75	
Thorium 232	0.768	0.31	0.29	1.0		TH	0.507	0.14	0.075		41	81	
Total Uranium (ug/g)	1.04	0.12	0.004	1.0		U_T	1.04	0.12	0.004		0	31	
Uranium 233/234	0.766	0.27	0.17	1.0		U	1.04	0.35	0.19		30	74	
Uranium 235	0.106	0.11	0.20	1.0	U	U	0.120	0.12	0.23	U	-		
Uranium 238	0.657	0.22	0.17	1.0		U	0.666	0.25	0.19		1	76	
Neptunium 237	0.102	0.082	0.061	1.0		NP	0.052	0.052	0.078	U	65	190	
Americium 241	1130	210	0.61	1.0		AM	1320	340	0.58		16	50	
Iodine 129	3.85	0.49	0.96	2.0		I	3.41	0.83	1.8		12	45	
Potassium 40	24.8	2.1	1.2			GAM	27.2	3.4	2.1		9	39	
Cobalt 60	U		0.12	0.050	U	GAM	U		0.22	U	-		
Cesium 137	1060	3.0	0.61	0.10		GAM	1080	4.0	1.3		2	32	
Radium 226	U		1.4		U	GAM	U		1.7	U	-		
Radium 228	U		1.6		U	GAM	U		1.3	U	-		
Europium 152	U		2.1	0.10	U	GAM	U		3.2	U	-		
Europium 154	U		0.38	0.10	U	GAM	U		0.63	U	-		
Europium 155	U		1.2	0.10	U	GAM	U		1.9	U	-		
Thorium 228	U		1.5		U	GAM	U		1.6	U	-		
Thorium 232	U		1.6		U	GAM	U		1.3	U	-		
Uranium 235	U		2.0		U	GAM	U		3.3	U	-		
Uranium 238	U		12		U	GAM	U		24	U	-		
Americium 241	974	3.2	1.7			GAM	1070	4.0	2.3		9	32	

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	07/17/03

DUPLICATE, cont.

SDG	7528		Client/Case no	Hanford	SDG H2242
Contact	Melissa C. Mannion		Contract	No. 630	
DUPLICATE		ORIGINAL			
Lab sample id	R305191-07	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-007	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 F03-006

QC-DUP#2 44885

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-011 B17115

DUPLICATE

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R305191-11	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-011	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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
Plutonium 238	282	63	25	1.0		PU	316	71	25		11	49	
Plutonium 239/240	6620	620	25	1.0		PU	7110	650	25		7	22	

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

QC-DUP#2A1 45095

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-008

B17115

MATRIX SPIKE

SDG	7528			Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R305191-08	Lab sample id	R305191-02	Client sample id	B17115
Dept sample id	7528-008	Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247) SOLID
		Received	05/29/03	Collected/Weight	05/20/03 08:30 159.7 g
% solids	88.1	% solids	88.1	Custody/SAF No	F03-006-106 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	196	2.0	0.37	400	X	H	50.6	2.0	145	1.5	101	27-173	60-140

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

QC-MS#2 44886

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-001 B17124

DATA SHEET

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-01	Client sample id	B17124		
Dept sample id	7528-001	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/29/03	Collected/Weight	05/20/03 09:45	185.0 g	
% solids	87.2	Custody/SAF No	F03-006-106	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	319	3.2	0.48	400		H
Carbon 14	14762-75-5	0.950	1.4	2.3	50	U	C
Nickel 63	13981-37-8	-0.546	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	0.614	0.20	0.27	1.0		SR
Technetium 99	14133-76-7	0.796	0.22	0.56	15	B	TC
Thorium 228	14274-82-9	0.484	0.14	0.094			TH
Thorium 230	14269-63-7	0.008	0.12	0.27	1.0	U	TH
Thorium 232	TH-232	0.526	0.14	0.065	1.0		TH
Total Uranium (ug/g)	7440-61-1	1.65	0.18	0.004	1.0		U_T
Uranium 233/234	U-233/234	1.01	0.33	0.18	1.0		U
Uranium 235	15117-96-1	0.227	0.17	0.22	1.0		U
Uranium 238	U-238	0.703	0.28	0.18	1.0		U
Neptunium 237	13994-20-2	0.032	0.064	0.096	1.0	U	NP
Plutonium 238	13981-16-3	132	42	26	1.0		PU
Plutonium 239/240	PU-239/240	3120	330	26	1.0		PU
Americium 241	14596-10-2	738	190	0.53	1.0		AM
Iodine 129	15046-84-1	10.3	0.90	1.7	2.0		I
Potassium 40	13966-00-2	19.6	3.4	2.1			GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Cesium 137	10045-97-3	488	3.1	0.93	0.10		GAM
Radium 226	13982-63-3	U		1.8		U	GAM
Radium 228	15262-20-1	U		1.7		U	GAM
Europium 152	14683-23-9	U		2.6	0.10	U	GAM
Europium 154	15585-10-1	U		0.62	0.10	U	GAM
Europium 155	14391-16-3	U		1.5	0.10	U	GAM
Thorium 228	14274-82-9	U		1.0		U	GAM
Thorium 232	TH-232	U		1.7		U	GAM
Uranium 235	15117-96-1	U		2.3		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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-001 B17124

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-01	Client sample id	B17124		
Dept sample id	7528-001	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/29/03	Collected/Weight	05/20/03 09:45	185.0 g	
% solids	87.2	Custody/SAF No	F03-006-106	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		22		U	GAM
Americium 241	14596-10-2	490	3.2	1.8			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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-002 **B17115**

DATA SHEET

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-02	Client sample id	B17115		
Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/29/03	Collected/Weight	05/20/03 08:30	159.7 g	
% solids	88.1	Custody/SAF No	F03-006-106	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	145	1.5	0.31	400		H
Carbon 14	14762-75-5	1.58	1.5	2.5	50	U	C
Nickel 63	13981-37-8	-1.22	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.637	0.20	0.27	1.0		SR
Technetium 99	14133-76-7	0.791	0.25	0.48	15	B	TC
Thorium 228	14274-82-9	0.858	0.20	0.093			TH
Thorium 230	14269-63-7	0.702	0.20	0.21	1.0		TH
Thorium 232	TH-232	0.507	0.14	0.075	1.0		TH
Total Uranium (ug/g)	7440-61-1	1.04	0.12	0.004	1.0		U_T
Uranium 233/234	U-233/234	1.04	0.35	0.19	1.0		U
Uranium 235	15117-96-1	0.120	0.12	0.23	1.0	U	U
Uranium 238	U-238	0.666	0.25	0.19	1.0		U
Neptunium 237	13994-20-2	0.052	0.052	0.078	1.0	U	NP
Plutonium 238	13981-16-3	316	71	25	1.0		PU
Plutonium 239/240	PU-239/240	7110	650	25	1.0		PU
Americium 241	14596-10-2	1320	340	0.58	1.0		AM
Iodine 129	15046-84-1	3.41	0.83	1.8	2.0		I
Potassium 40	13966-00-2	27.2	3.4	2.1			GAM
Cobalt 60	10198-40-0	U		0.22	0.050	U	GAM
Cesium 137	10045-97-3	1080	4.0	1.3	0.10		GAM
Radium 226	13982-63-3	U		1.7		U	GAM
Radium 228	15262-20-1	U		1.3		U	GAM
Europium 152	14683-23-9	U		3.2	0.10	U	GAM
Europium 154	15585-10-1	U		0.63	0.10	U	GAM
Europium 155	14391-16-3	U		1.9	0.10	U	GAM
Thorium 228	14274-82-9	U		1.6		U	GAM
Thorium 232	TH-232	U		1.3		U	GAM
Uranium 235	15117-96-1	U		3.3		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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-002 B17115

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford		SDG H2242
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-02	Client sample id	B17115		
Dept sample id	7528-002	Location/Matrix	216-A-10 (C3247)		SOLID
Received	05/29/03	Collected/Weight	05/20/03 08:30	159.7 g	
% solids	88.1	Custody/SAF No	F03-006-106	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		24		U	GAM
Americium 241	14596-10-2	1070	4.0	2.3			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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-003 B17116

DATA SHEET

SDG	7528	Client/Case no	Hanford SDG H2242
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R305191-03	Client sample id	B17116
Dept sample id	7528-003	Location/Matrix	216-A-10 (C3247) SOLID
Received	05/30/03	Collected/Weight	05/27/03 10:30 209.3 g
% solids	90.9	Custody/SAF No	F03-006-107 F03-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	134	1.4	0.30	400		H
Carbon 14	14762-75-5	0.356	1.3	2.2	50	U	C
Nickel 63	13981-37-8	-0.994	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	11.1	0.59	0.24	1.0		SR
Technetium 99	14133-76-7	0.785	0.21	0.55	15	B	TC
Thorium 228	14274-82-9	0.572	0.15	0.091			TH
Thorium 230	14269-63-7	0.581	0.17	0.22	1.0		TH
Thorium 232	TH-232	0.353	0.12	0.073	1.0		TH
Total Uranium (ug/g)	7440-61-1	2.78	0.32	0.004	1.0		U_T
Uranium 233/234	U-233/234	1.39	0.41	0.19	1.0		U
Uranium 235	15117-96-1	0.150	0.12	0.23	1.0	U	U
Uranium 238	U-238	1.22	0.36	0.19	1.0		U
Neptunium 237	13994-20-2	0.132	0.11	0.079	1.0		NP
Plutonium 238	13981-16-3	0.070	0.070	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0.805	0.36	0.27	1.0		PU
Americium 241	14596-10-2	70.6	6.5	0.28	1.0		AM
Iodine 129	15046-84-1	4.40	0.84	1.7	2.0		I
Potassium 40	13966-00-2	22.8	1.4	0.61			GAM
Cobalt 60	10198-40-0	U		0.069	0.050	U	GAM
Cesium 137	10045-97-3	294	1.0	0.25	0.10		GAM
Radium 226	13982-63-3	U		0.75		U	GAM
Radium 228	15262-20-1	1.06	0.26	0.26			GAM
Europium 152	14683-23-9	U		0.85	0.10	U	GAM
Europium 154	15585-10-1	U		0.41	0.10	U	GAM
Europium 155	14391-16-3	U		0.49	0.10	U	GAM
Thorium 228	14274-82-9	0.860	0.26	0.38			GAM
Thorium 232	TH-232	1.06	0.26	0.26			GAM
Uranium 235	15117-96-1	U		0.83		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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-003 B17116

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-03	Client sample id	B17116		
Dept sample id	7528-003	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/30/03	Collected/Weight	05/27/03 10:30	209.3 g	
% solids	90.9	Custody/SAF No	F03-006-107	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		9.7		U	GAM
Americium 241	14596-10-2	108	0.80	0.61			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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-004 B17123

DATA SHEET

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-04	Client sample id	B17123		
Dept sample id	7528-004	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/30/03	Collected/Weight	05/27/03 10:30	230.6 g	
% solids	90.3	Custody/SAF No	F03-006-107	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	160	1.6	0.33	400		H
Carbon 14	14762-75-5	1.44	1.3	2.2	50	U	C
Nickel 63	13981-37-8	0.299	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	5.23	0.43	0.26	1.0		SR
Technetium 99	14133-76-7	1.03	0.23	0.54	15	B	TC
Thorium 228	14274-82-9	0.454	0.22	0.20			TH
Thorium 230	14269-63-7	0.959	0.33	0.20	1.0		TH
Thorium 232	TH-232	0.479	0.22	0.20	1.0		TH
Total Uranium (ug/g)	7440-61-1	2.64	0.30	0.004	1.0		U_T
Uranium 233/234	U-233/234	0.938	0.29	0.18	1.0		U
Uranium 235	15117-96-1	0.114	0.11	0.22	1.0	U	U
Uranium 238	U-238	0.891	0.29	0.18	1.0		U
Neptunium 237	13994-20-2	-0.040	0.079	0.30	1.0	U	NP
Plutonium 238	13981-16-3	0	0.33	1.2	1.0	U	PU
Plutonium 239/240	PU-239/240	0.976	0.66	1.2	1.0	U	PU
Americium 241	14596-10-2	78.8	7.0	0.26	1.0		AM
Iodine 129	15046-84-1	5.17	0.68	1.4	2.0		I
Potassium 40	13966-00-2	21.1	0.82	0.38			GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U	GAM
Cesium 137	10045-97-3	347	0.70	0.16	0.10		GAM
Radium 226	13982-63-3	0.516	0.19	0.25			GAM
Radium 228	15262-20-1	0.984	0.20	0.18			GAM
Europium 152	14683-23-9	U		0.56	0.10	U	GAM
Europium 154	15585-10-1	0.200	0.12	0.14	0.10		GAM
Europium 155	14391-16-3	U		0.32	0.10	U	GAM
Thorium 228	14274-82-9	0.633	0.19	0.27			GAM
Thorium 232	TH-232	0.984	0.20	0.18			GAM
Uranium 235	15117-96-1	U		0.54		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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

7528-004 **B17123**

DATA SHEET, cont

SDG	7528	Client/Case no	Hanford	SDG H2242	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R305191-04	Client sample id	B17123		
Dept sample id	7528-004	Location/Matrix	216-A-10 (C3247)	SOLID	
Received	05/30/03	Collected/Weight	05/27/03 10:30	230.6 g	
% solids	90.3	Custody/SAF No	F03-006-107	F03-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		5.2		U	GAM
Americium 241	14596-10-2	102	0.60	0.60			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	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test AM Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241
Preparation batch 7071-037					
R305191-01		R1	7528-001	B17124	738
R305191-02		R1	7528-002	B17115	1320
R305191-03			7528-003	B17116	70.6
R305191-04			7528-004	B17123	78.8
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07		R1	7528-007	Duplicate (R305191-02)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0

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

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 5.0 %	Reference Lab Notebook 7071 pg. 037												
R305191-01		R1	B17124	0.53	0.500			36		109			48	07/02/03	07/07	SS-051
R305191-02		R1	B17115	0.58	0.500			31		109			48	07/02/03	07/07	SS-052
R305191-03			B17116	0.28	0.500			72		101			36	07/02/03	07/02	SS-042
R305191-04			B17123	0.26	0.500			65		134			36	07/02/03	07/02	SS-063
R305191-05			LCS (QC ID=44883)	0.23	0.500			65		135				07/02/03	07/02	SS-064
R305191-06			BLK (QC ID=44884)	0.20	0.500			75		135				07/02/03	07/02	SS-065
R305191-07		R1	Duplicate (R305191-02) (QC ID=44885)	0.61	0.500			32		110			48	07/02/03	07/07	SS-056
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test AM Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	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	MDA	0.38	±	0.36
FOR 7 SAMPLES	YIELD	54	±	40

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test NP Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Neptunium 237
Preparation batch 7071-037					
R305191-01			7528-001	B17124	U
R305191-02			7528-002	B17115	U
R305191-03			7528-003	B17116	0.132
R305191-04			7528-004	B17123	U
R305191-05			7528-005	LCS (QC ID=44883)	LOW
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	ok
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 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	0.096	0.500			65		130			37	06/26/03	06/26	SS-059
R305191-02			B17115	0.078	0.500			74		130			37	06/26/03	06/26	SS-060
R305191-03			B17116	0.079	0.500			76		130			30	06/26/03	06/26	SS-061
R305191-04			B17123	0.30	0.500			51		131			30	06/26/03	06/26	SS-062
R305191-05			LCS (QC ID=44883)	0.081	0.500			58		170				06/26/03	06/27	SS-059
R305191-06			BLK (QC ID=44884)	0.060	0.500			73		170				06/26/03	06/27	SS-060
R305191-07			Duplicate (R305191-02) (QC ID=44853)	0.061	0.500			75		170			38	06/26/03	06/27	SS-061
Nominal values and limits from method				1.0	0.500			20-105		100			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test NP Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.11	±	0.17
FOR 7 SAMPLES	YIELD	67	±	19

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test PU Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7071-037						
R305191-01		A1	7528-001	B17124	132	3120
R305191-02		A1	7528-002	B17115	316	7110
R305191-03		A1	7528-003	B17116	U	0.805
R305191-04		A1	7528-004	B17123	U	U
R305191-09			7528-009	LCS (QC ID=45093)	ok	ok
R305191-10			7528-010	BLK (QC ID=45094)	U	U
R305191-11			7528-011	Duplicate (R305191-02)	ok	ok
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 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01		A1	B17124	26	0.0050			80		101			58	07/17/03	07/17	SS-059
R305191-02		A1	B17115	25	0.0050			81		101			58	07/17/03	07/17	SS-060
R305191-03		A1	B17116	0.27	0.500			78		101			51	07/17/03	07/17	SS-061
R305191-04		A1	B17123	1.2	0.100			83		101			51	07/17/03	07/17	SS-062
R305191-09			LCS (QC ID=45093)	0.34	0.500			67		102				07/17/03	07/17	SS-063
R305191-10			BLK (QC ID=45094)	0.27	0.500			77		102				07/17/03	07/17	SS-064
R305191-11			Duplicate (R305191-02) (QC ID=45095)	25	0.0050			82		102			58	07/17/03	07/17	SS-065
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

MM 7/17/8

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test	PU
Matrix	SOLID
SDG	7528
Contact	Melissa C. Mannion

LAB METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H2242

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	11	±	27
FOR 7 SAMPLES	YIELD	78	±	11

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test TH Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 7071-037					
R305191-01			7528-001	B17124	U
R305191-02			7528-002	B17115	0.702
R305191-03			7528-003	B17116	0.581
R305191-04			7528-004	B17123	0.959
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	OUT
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	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 7071-037			2σ prep error 5.0 %	Reference Lab Notebook 7071 pg. 037												
R305191-01			B17124	0.27	0.250			97		609			51	07/09/03	07/10	SS-028
R305191-02			B17115	0.21	0.250			86		609			51	07/09/03	07/10	SS-029
R305191-03			B17116	0.22	0.250			91		611			44	07/09/03	07/10	SS-042
R305191-04			B17123	0.20	0.250			98		218			45	07/09/03	07/11	SS-058
R305191-05			LCS (QC ID=44883)	0.29	0.250			82		166				07/09/03	07/10	SS-029
R305191-06			BLK (QC ID=44884)	0.31	0.250			100		166				07/09/03	07/10	SS-035
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.29	0.250			84		166			51	07/09/03	07/10	SS-036
Nominal values and limits from method				1.0	0.250			20-105		150			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test	TH
Matrix	SOLID
SDG	7528
Contact	Melissa C. Mannion

LAB METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H2242

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.26	±	0.089
FOR 7 SAMPLES	YIELD	91	±	15

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

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 7071-037											
R305191-01			7528-001	B17124	1.01	0.227	0.703	144	74	32	27
R305191-02			7528-002	B17115	1.04	U	0.666	156	79	18	19
R305191-03			7528-003	B17116	1.39	U	1.22	114	48	12	10
R305191-04			7528-004	B17123	0.938	U	0.891	105	47	13	13
R305191-05			7528-005	LCS (QC ID=44883)	ok	ok	ok				
R305191-06			7528-006	BLK (QC ID=44884)	U	U	U				
R305191-07			7528-007	Duplicate (R305191-02)	ok	- U	ok	117	57	16	18
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	127		18	

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 7071-037			2σ prep error 5.0 %	Reference Lab Notebook 7071 pg. 037												
R305191-01			B17124	0.22	0.500			87		125			51	07/08/03	07/10	SS-029
R305191-02			B17115	0.23	0.500			94		123			51	07/08/03	07/10	SS-065
R305191-03			B17116	0.23	0.500			93		123			44	07/08/03	07/10	SS-066
R305191-04			B17123	0.22	0.500			94		129			42	07/08/03	07/08	SS-058
R305191-05			LCS (QC ID=44883)	0.95	0.500			86		128				07/08/03	07/08	SS-059
R305191-06			BLK (QC ID=44884)	0.20	0.500			98		128				07/08/03	07/08	SS-060
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.20	0.500			98		128			49	07/08/03	07/08	SS-061
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test	U
Matrix	SOLID
SDG	7528
Contact	Melissa C. Mannion

LAB METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H2242

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	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	MDA	0.32	±	0.55
FOR 7 SAMPLES	YIELD	93	±	10

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test SR Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7071-037					
R305191-01			7528-001	B17124	0.614
R305191-02			7528-002	B17115	0.637
R305191-03			7528-003	B17116	11.1
R305191-04			7528-004	B17123	5.23
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	ok
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 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	0.27	1.00			91		100			41	06/30/03	06/30	GRB-201
R305191-02			B17115	0.27	1.00			88		100			41	06/30/03	06/30	GRB-202
R305191-03			B17116	0.24	1.00			97		100			34	06/30/03	06/30	GRB-217
R305191-04			B17123	0.26	1.00			96		100			34	06/30/03	06/30	GRB-204
R305191-05			LCS (QC ID=44883)	0.34	1.00			75		100				06/30/03	06/30	GRB-229
R305191-06			BLK (QC ID=44884)	0.29	1.00			79		100				06/30/03	06/30	GRB-218
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.25	1.00			91		100			41	06/30/03	06/30	GRB-219
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-381	Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA 0.27 ± 0.066
FOR 7 SAMPLES	YIELD 88 ± 17

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test TC Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99
Preparation batch 7071-037					
R305191-01			7528-001	B17124	0.796
R305191-02			7528-002	B17115	0.791
R305191-03			7528-003	B17116	0.785
R305191-04			7528-004	B17123	1.03
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	0.773
R305191-07			7528-007	Duplicate (R305191-02)	ok

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

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	0.56	1.02			89		50			41	06/26/03	06/30	GRB-221
R305191-02			B17115	0.48	1.03			88		65			40	06/26/03	06/29	GRB-224
R305191-03			B17116	0.55	1.03			92		50			34	06/26/03	06/30	GRB-223
R305191-04			B17123	0.54	1.04			90		50			34	06/26/03	06/30	GRB-224
R305191-05			LCS (QC ID=44883)	0.53	1.00			90		55				06/26/03	07/01	GRB-221
R305191-06			BLK (QC ID=44884)	0.53	1.00			96		50				06/26/03	07/01	GRB-203
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.56	1.03			90		50			41	06/26/03	06/30	GRB-230
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test TC Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 2
	CP-002	Q.C. Preparation, rev 4
	CP-003	Addition of Carriers and Tracers, rev 5
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.54	±	0.055
FOR 7 SAMPLES	YIELD	91	±	5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test GAM Matrix SOLID	Client Hanford
SDG 7528	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H2242

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 7071-037						
R305191-01			7528-001	B17124	U	488
R305191-02			7528-002	B17115	U	1080
R305191-03			7528-003	B17116	U	294
R305191-04			7528-004	B17123	U	347
R305191-05			7528-005	LCS (QC ID=44883)	ok	ok
R305191-06			7528-006	BLK (QC ID=44884)	U	U
R305191-07			7528-007	Duplicate (R305191-02)	- U	ok
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 7071-037			2σ prep error 15.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	7.2	45.2					234			31	06/13/03	06/20	PD,03,00
R305191-02			B17115	9.3	31.6					407			32	06/13/03	06/21	PD,03,00
R305191-03			B17116	1.9	62.6					407			25	06/13/03	06/21	PD,04,00
R305191-04			B17123	1.2	61.0					1148			25	06/13/03	06/21	PD,04,00
R305191-05			LCS (QC ID=44883)	0.26	31.6					408				06/13/03	06/21	PD,07,00
R305191-06			BLK (QC ID=44884)	0.98	31.6					1150				06/13/03	06/21	PD,07,00
R305191-07			Duplicate (R305191-02) (QC ID=44885)	4.7	31.6					440			33	06/13/03	06/22	PD,04,00
Nominal values and limits from method				0.050	31.6					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 4
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD FOR 7 SAMPLES			
MDA	3.6	±	7.0
YIELD		±	

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test I Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129
Preparation batch 7071-037					
R305191-01			7528-001	B17124	10.3
R305191-02			7528-002	B17115	3.41
R305191-03			7528-003	B17116	4.40
R305191-04			7528-004	B17123	5.17
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	ok
Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil				RDLs (pCi/g)	2.0

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 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	1.7	1.01			49		606			43	07/02/03	07/02	XSPEC-004
R305191-02			B17115	1.8	1.02			41		731			43	07/02/03	07/02	XSPEC-004
R305191-03			B17116	1.7	1.04			43		621			37	07/02/03	07/03	XSPEC-004
R305191-04			B17123	1.4	1.00			45		1109			37	07/02/03	07/03	XSPEC-004
R305191-05			LCS (QC ID=44883)	1.0	1.00			92		1503				07/02/03	07/04	XSPEC-004
R305191-06			BLK (QC ID=44884)	0.58	1.00			93		1493				07/02/03	07/05	XSPEC-004
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.96	1.02			57		758			47	07/02/03	07/06	XSPEC-004
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 7 SAMPLES
MDA 1.3 ± 0.93
YIELD 60 ± 46

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U T Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Uranium
Preparation batch 7071-037					
R305191-01			7528-001	B17124	1.65
R305191-02			7528-002	B17115	1.04
R305191-03			7528-003	B17116	2.78
R305191-04			7528-004	B17123	2.64
R305191-05			7528-005	LCS (QC ID=44883)	ok
R305191-06			7528-006	BLK (QC ID=44884)	U
R305191-07			7528-007	Duplicate (R305191-02)	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 7071-037			2σ prep error 9.0 %	Reference Lab Notebook 7071 pg. 037												
R305191-01			B17124	0.004	0.100								30	06/19/03	06/19	KPA-001
R305191-02			B17115	0.004	0.100								30	06/19/03	06/19	KPA-001
R305191-03			B17116	0.004	0.100								23	06/19/03	06/19	KPA-001
R305191-04			B17123	0.004	0.100								23	06/19/03	06/19	KPA-001
R305191-05			LCS (QC ID=44883)	0.037	0.100									06/19/03	06/19	KPA-001
R305191-06			BLK (QC ID=44884)	0.004	0.100									06/19/03	06/19	KPA-001
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.004	0.100								30	06/19/03	06/19	KPA-001
Nominal values and limits from method				1.0	0.100								180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test U T Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2242

PROCEDURES	REFERENCE	UTOT_KPA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 4
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5

AVERAGES ± 2 SD	MDA	0.009 ± 0.025
FOR 7 SAMPLES	YIELD	±

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test C Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 7071-037						
R305191-01			7528-001	B17124	U	
R305191-02			7528-002	B17115	U	
R305191-03			7528-003	B17116	U	
R305191-04			7528-004	B17123	U	
R305191-05			7528-005	LCS (QC ID=44883)	ok	
R305191-06			7528-006	BLK (QC ID=44884)	U	
R305191-07			7528-007	Duplicate (R305191-02)	-	U

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

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 10.0 %	Reference Lab Notebook 7071 pg. 037												
R305191-01			B17124	2.3	0.372			100		100			52	07/07/03	07/11	LSC-005
R305191-02			B17115	2.5	0.341			100		100			52	07/07/03	07/11	LSC-005
R305191-03			B17116	2.2	0.375			100		100			45	07/07/03	07/11	LSC-005
R305191-04			B17123	2.2	0.389			100		100			45	07/07/03	07/11	LSC-005
R305191-05			LCS (QC ID=44883)	8.0	0.341			100		10				07/07/03	07/12	LSC-005
R305191-06			BLK (QC ID=44884)	2.6	0.341			100		100				07/07/03	07/11	LSC-005
R305191-07			Duplicate (R305191-02) (QC ID=44885)	2.2	0.398			100		100			52	07/07/03	07/11	LSC-005
Nominal values and limits from method				50	0.341					50			180			

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

AVERAGES ± 2 SD MDA 3.1 ± 4.3
FOR 7 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test H Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7071-037						
R305191-01			7528-001	B17124	319	
R305191-02			7528-002	B17115	145	
R305191-03			7528-003	B17116	134	
R305191-04			7528-004	B17123	160	
R305191-05			7528-005	LCS (QC ID=44883)	ok	
R305191-06			7528-006	BLK (QC ID=44884)	U	
R305191-07			7528-007	Duplicate (R305191-02)	ok	
R305191-08			7528-008	Spike (R305191-02)	ok	X
Nominal values and limits from method				RDLs (pCi/g)	400	
200-PW-2/200-PW-4 OU - Borehole Soil						

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037													
R305191-01			B17124	0.48	20.7			32		47			34	06/23/03	06/23	LSC-005
R305191-02			B17115	0.31	20.7			33		102			34	06/23/03	06/23	LSC-005
R305191-03			B17116	0.30	21.1			32		108			27	06/23/03	06/23	LSC-005
R305191-04			B17123	0.33	20.9			33		91			27	06/23/03	06/23	LSC-005
R305191-05			LCS (QC ID=44883)	0.29	20.0			33		120				06/23/03	06/23	LSC-005
R305191-06			BLK (QC ID=44884)	0.29	20.0			33		120				06/23/03	06/24	LSC-005
R305191-07			Duplicate (R305191-02) (QC ID=44885)	0.30	20.5			34		101			35	06/23/03	06/24	LSC-005
R305191-08			Spike (R305191-02) (QC ID=44886)	0.37	20.5			32		76			35	06/23/03	06/24	LSC-005
Nominal values and limits from method				400	20.0					25			180			

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test H	Matrix SOLID
SDG 7528	
Contact Melissa C. Mannion	

LAB METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H2242	

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 6

AVERAGES ± 2 SD	MDA	0.33	±	0.13
FOR 8 SAMPLES	YIELD	33	±	1

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

Test NI_L Matrix SOLID
SDG 7528
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2242

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 7071-037						
R305191-01			7528-001	B17124	U	
R305191-02			7528-002	B17115	U	
R305191-03			7528-003	B17116	U	
R305191-04			7528-004	B17123	U	
R305191-05			7528-005	LCS (QC ID=44883)	ok	
R305191-06			7528-006	BLK (QC ID=44884)	U	
R305191-07			7528-007	Duplicate (R305191-02)	-	U
Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil				RDLs (pCi/g)	30	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7071-037 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 037																
R305191-01			B17124	2.4	0.500			84		100			37	06/26/03	06/26	LSC-006
R305191-02			B17115	2.3	0.500			87		100			37	06/26/03	06/26	LSC-006
R305191-03			B17116	2.3	0.500			89		100			30	06/26/03	06/26	LSC-006
R305191-04			B17123	2.3	0.500			89		100			30	06/26/03	06/26	LSC-006
R305191-05			LCS (QC ID=44883)	2.3	0.500			87		100				06/26/03	06/27	LSC-006
R305191-06			BLK (QC ID=44884)	2.4	0.500			87		100				06/26/03	06/27	LSC-006
R305191-07			Duplicate (R305191-02) (QC ID=44885)	2.2	0.500			90		100			38	06/26/03	06/27	LSC-006
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-280	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD	MDA 2.3 ± 0.14
FOR 7 SAMPLES	YIELD 88 ± 4

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2242

SDG	7528
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG H2242

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	07/17/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

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 7528
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

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 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

MATRIX SPIKE

for the recovery.

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

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

SDG 7528
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2242

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 07/17/03

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	F03-006-106	Page 1 of 1

Collector: Johansen/Pope/Pfister H2242 (7528)	Company Contact: LC Hulstrom; Telephone No.: 373-3928 H2242 (7528)	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: 216-A-10 (C3247) ~~52.5-55 ft~~ 5254' 54'-56' 05-20-03	SAF No.: F03-006	
Ice Chest No.: ERC 99 022	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A030268	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A 05-22-03 Radioactive TicTO: B17131 B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time	[redacted]								
~~B17115~~	~~SOIL~~	~~5-20-03~~	~~0830~~								X	X	X
B17124	SOIL	5-20-03	0945								X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: [illegible]	5/20/03 1317	Received By/Stored In: HO-64-427 RcF	5/20/03 1317
Relinquished By/Removed From: HO-64-427 RcF	5/22/03 1120	Received By/Stored In: [illegible]	5/22/03 1120
Relinquished By/Removed From: [illegible] FH	5/22/03 1150	Received By/Stored In: RcF 1A 52203	1150
Relinquished By/Removed From: RcF 1A 52803	0800	Received By/Stored In: SJGALE	52803 0800
Relinquished By/Removed From: SJGALE	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX		Received By/Stored In: [illegible]	5-28-03 1000

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ~~** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.~~ 5/20/03

~~(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)~~
~~(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G.~~
~~(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)~~
~~(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.2; pH (Soil) - 9045; Total Cyanide - 9010~~
(5) 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
(6) Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DI=Drum Liquids
DL=Drum Solids
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	F03-006-106	Page 1 of 1
Collector: Johansen/Pope/Pfister H2242 (7528)	Company Contact: LC Hulstrom; Telephone No.: 373-3928 H2242 (7528)	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: 216-A-10 (C3247) ~~52.5-55 ft~~ 52.5'; 54'-56' (MS 5-20-03)	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 96 009	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: RSR 107188	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A (MS 5-20-03) Radioactive TICTO: B17131 B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17115	SOIL	5-20-03	0830								X	X	X
~~B17124~~	~~SOIL~~	~~5-20-03~~	~~0945~~								X	X	X
						52803							

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5/20/03 1317	HO-64-427 RCF	5/20/03 1317
HO-64-427 RCF	5/20/03 1320	[illegible]	5/20/03 1320
[illegible]	5/20/03 1150	RCF 1A 52203	1150
RCF 1A 52803	0800	SJGALE	52803 0800
SJGALE	52803 0800	FED EX	
FED EX		[illegible]	5-29-03 1000

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ~~** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.~~ 5/20/03

~~(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)~~
~~(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add On) (2-Butoxyethanol, Tributyl phosphate);~~
~~TPH Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-G.~~
~~(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver);~~
~~ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel);~~
~~Mercury - 7471 - (CV)~~
~~(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010~~
(5) 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
(6) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

*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	F03-006-107	Page 1 of 1

Collector: Johansen/Pope/Pfister H2242 (7528)	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: 216-A-10 (C3247) 62.5-65 ft H2242(7528)	SAF No.: F03-006	
Ice Chest No.: ERC 99-505	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A030 269	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
TMS 5-27-03
N/A
Radiological Tie To: ~~B17116~~ B17133; ~~B17134~~ RF 5-29-03

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS

				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3
Sample No.	Matrix *	Sample Date	Sample Time									
B17116	SOIL	5-27-03	1030								X	X	X
B17123	Soil	5-27-03	1030								X	X	X
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~								~~X~~	~~X~~	~~X~~

TMS 5-27-03

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Mariah Carson/Mariah	5-27-03 1415	Received By/Stored In: ERC R. Fahle	5-27-03 1415
Relinquished By/Removed From: R. Fahle R. Fahle	5-27-03 1415	Received By/Stored In: JB 3728	5-27-03 1415
Relinquished By/Removed From: JB 3728	5-29-03 1000	Received By/Stored In: R. Fahle R. Fahle	5-29-03 1000
Relinquished By/Removed From: ERC R. Fahle R. Fahle	5-29-03 1000	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FED EX		Received By/Stored In: [illegible]	5-30-03 [illegible]
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, ~~Diethyl ether, Ethylene glycol, Methanol~~}
(2) Semi-VOA - 8270A (TCL); ~~Semi-VOA - 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}~~; ~~TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G~~
(3) ~~ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}~~; ~~ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}~~; ~~Mercury - 7471 - (CV)~~
(4) ~~IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3, pH (Soil) - 9045; Total Cyanide - 9010~~
(5) 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
(6) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129; Nickel-63; Neptunium-237

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
P=Paste
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

ANALYTICAL SERVICES GROUP
Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-29-03

CoC No. F03-006-106

Container I.D. No. ERC-99-022 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: 1
7. Number of containers per sample: 3 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [✓] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Samples are: Preserved [ ] Not preserved [✓] Preservative* _____
12. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 5-29-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B17124	240						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

EBERLINE SERVICES

ANALYTICAL SERVICES GROUP
Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-29-03

CoC No. F03-006-106

Container I.D. No. ERC-96-009 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: 1
7. Number of containers per sample: 3 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Samples are: Preserved [ ] Not preserved [✓] Preservative* _____
12. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 5-29-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B17115	640						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

EBERLINE SERVICES

ANALYTICAL SERVICES GROUP
Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-30-03

CoC No. FU3-006-107

Container I.D. No. GRC-99-508 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: 3 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Samples are: Preserved [ ] Not preserved [✓] Preservative* _____
12. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 5-30-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B17116	240						
B17123	240						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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

LIONVILLE LABORATORY INC.

11 July 2003

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

JUL 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 #	0305L520/533
SDG #	H2242
SAF #	F03-006
Date Received	5-29/30-03
# Samples	4
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	
DRO/GRO/KRO	X
Herbicides	
GC Alcohol	X
Metals	X
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.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124	001	S	03LVX166	05/20/03	N/A	05/30/03
B17124	001 MS	S	03LVX166	05/20/03	N/A	05/30/03
B17124	001 MSD	S	03LVX166	05/20/03	N/A	05/30/03
B17115	002	S	03LVX166	05/20/03	N/A	05/30/03

LAB QC:

VBLKTL	MB1	S	03LVX166	N/A	N/A	05/30/03
VBLKTL	MB1 BS	S	03LVX166	N/A	N/A	05/30/03

JUL 2003
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116	001	S	03LVG121	05/27/03	N/A	06/06/03
B17123	002	S	03LVG121	05/27/03	N/A	06/06/03
B17123	002 MS	S	03LVG121	05/27/03	N/A	06/06/03
B17123	002 MSD	S	03LVG121	05/27/03	N/A	06/06/03

LAB QC:

VBLKVW	MB1	S	03LVG121	N/A	N/A	06/06/03
VBLKVW	MB1 BS	S	03LVG121	N/A	N/A	06/06/03

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD F03-006
LVL #: 0305L520 & 0305L533
SDG/SAF # H2242/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-29,30-2003

GC/MS VOLATILE

Four (4) soil samples were collected on 05-20,27-2003.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL volatile target compounds on 05-30-2003 and 06-06-2003.

The following is a summary of the QC results accompanying these 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 with the exception of some discrepancies, which have been recorded on the Sample Receipt Checklist.
2. Samples were analyzed within holding time.
3. Non-target compounds were detected in the samples.
4. Two (2) of thirty-six (36) surrogate recoveries were outside EPA QC limits. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B17123.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank 03LVG121-MB1 contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL. The method blank 03LVX166-MB1 contained the target compound Xylene (Total) at a level less than the CRQL.
8. Internal standard area criteria were not met for samples B17124 and B17123. The analysis of matrix spike samples fulfills their reanalysis requirement.
9. A spectral search was conducted for the compound 2-Pentanone and this compound was not identified in the samples for both batches.

   The instrument was not calibrated for the compound N-butylbenzene in LVL # 0305L520; however, a spectral search was conducted for the compound and the compound was not identified in the samples.
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 data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor
President
Lionville Laboratory Incorporated

06-26-03
Date

som\group\data\voa\tnu-hanford\0305-520&533.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 2 4 pages.

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

GLOSSARY

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection 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. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike 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	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

MP - Missed Peak: manually added peak not found by automatic quan program.

PA - Peak Assignment: quan report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/20/03 12:09

RFW Batch Number: **0305L520** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1a

	Cust ID:	B17124		B17124		B17124		B17115		VBLKTL		VBLKTL BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		03LVX166-MB1		03LVX166-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.14		1.02		1.04		1.11		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	97	%	103	%	104	%	100	%	99	%	94	%
	Bromofluorobenzene	74	%	88	%	91	%	90	%	93	%	95	%
	1,2-Dichloroethane-d4	98	%	109	%	106	%	90	%	92	%	97	%
			fl		fl		fl		fl		fl		fl
Chloromethane		13	U	12	U	12	U	13	U	10	U	10	U
Bromomethane		13	U	12	U	12	U	13	U	10	U	10	U
Vinyl Chloride		13	U	12	U	12	U	13	U	10	U	10	U
Chloroethane		13	U	12	U	12	U	13	U	10	U	10	U
Methylene Chloride		23		38		27		20		5	U	4	J
Acetone		22		31		20		13	U	10	U	10	U
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	109	%	100	%	6	U	5	U	87	%
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
2-Butanone		13	U	12	U	12	U	13	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	99	%	96	%	6	U	5	U	90	%
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Benzene		6	U	105	%	102	%	6	U	5	U	89	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		13	U	12	U	12	U	13	U	10	U	10	U
2-Hexanone		13	U	12	U	12	U	13	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Toluene		2	J	110	%	105	%	6	U	5	U	90	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0305L520** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1b

Cust ID:	B17124	B17124	B17124	B17115	VBLKTL	VBLKTL BS
RFW#:	001	001 MS	001 MSD	002	03LVX166-MB1	03LVX166-MB1
Chlorobenzene	6 U	106 %	101 %	6 U	5 U	90 %
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	1 J	5 U
N-butylbenzene	NA	NA	NA	NA	NA	NA

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/23/03 10:40

RFW Batch Number: **0305L533** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1a

	Cust ID:	B17116		B17123		B17123		B17123		VBLKVW		VBLKVW BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		03LVG121-MB1		03LVG121-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.02		1.06		1.02		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	109	%	109	%	104	%	105	%	98	%	97	%
	Bromofluorobenzene	112	%	126 *	%	133 *	%	118	%	100	%	101	%
	1,2-Dichloroethane-d4	109	%	106	%	102	%	104	%	94	%	94	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	12	U	11	U	10	U	10	U
Bromomethane		11	U	11	U	12	U	11	U	10	U	10	U
Vinyl Chloride		11	U	11	U	12	U	11	U	10	U	10	U
Chloroethane		11	U	11	U	12	U	11	U	10	U	10	U
Methylene Chloride		29	B	27	B	22	B	25	B	1	J	4	JB
Acetone		140	B	35	B	34	B	42	B	2	J	10	U
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	6	U	82	%	84	%	5	U	82	%
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
2-Butanone		18		14		15		23		10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	6	U	94	%	94	%	5	U	95	%
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Benzene		6	U	6	U	92	%	92	%	5	U	90	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	12	U	11	U	10	U	10	U
2-Hexanone		11	U	11	U	12	U	11	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Toluene		1	J	2	J	98	%	102	%	5	U	93	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0305L533** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1b

Cust ID:	B17116	B17123	B17123	B17123	VBLKVW	VBLKVW BS
RFW#:	001	002	002 MS	002 MSD	03LVG121-MB1	03LVG121-MB1
Chlorobenzene	6 U	6 U	94 %	97 %	5 U	94 %
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	5 U
N-butylbenzene	6 U	6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

10

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17124

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: SOIL

Lab Sample ID: 0305L520-001

Sample wt/vol: 4.40 (g/mL) G

Lab File ID: x053016

Level: (low/med) LOW

Date Received: 05/29/03

% Moisture: not dec. 13

Date Analyzed: 05/30/03

Column: (pack/cap) CAP

Dilution Factor: 1.14

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	17.823	1000	J
2.	ALKANE	18.955	20	J
3.	ALKANE	19.687	4000	J
4.	ALKANE	21.308	600	J
5.	ALKANE	22.771	200	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17115

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: SOIL Lab Sample ID: 0305L520-002

Sample wt/vol: 4.50 (g/mL) G Lab File ID: x053019

Level: (low/med) LOW Date Received: 05/29/03

% Moisture: not dec. 11 Date Analyzed: 05/30/03

Column: (pack/cap) CAP Dilution Factor: 1.11

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.218	10	J
2.	ALKANE	19.670	60	J
3.	ALKANE	21.308	200	J
4.	ALKANE	22.772	200	J
5.	UNKNOWN	24.584	7	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKTL

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: SOIL

Lab Sample ID: 03LVX166-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: x053004

Level: (low/med) LOW

Date Received: 05/30/03

% Moisture: not dec. 0

Date Analyzed: 05/30/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17116

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: SOIL

Lab Sample ID: 0305L533-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: q060607

Level: (low/med) LOW

Date Received: 05/30/03

% Moisture: not dec. 8

Date Analyzed: 06/06/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	20.513	7000	J
2.	ALKANE	21.377	7000	J
3.	ALKANE	21.706	5000	J
4.	ALKANE	22.004	3000	J
5.	CYCLOALKANE	22.083	4000	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17123

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: SOIL

Lab Sample ID: 0305L533-002

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: g060608

Level: (low/med) LOW

Date Received: 05/30/03

% Moisture: not dec. 8

Date Analyzed: 06/06/03

Column: (pack/cap) CAP

Dilution Factor: 1.02

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	20.495	8000	J
2.	ALKANE	21.377	10000	J
3.	ALKANE	21.700	8000	J
4.	ALKANE	21.864	4000	J
5.	ALKANE	22.004	5000	J
6.	CYCLOALKANE	22.083	6000	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKVW

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: SOIL

Lab Sample ID: 03LVG121-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: g060605

Level: (low/med) LOW

Date Received: 06/06/03

% Moisture: not dec. 0

Date Analyzed: 06/06/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.787	10	J

FORM 1 VOA-TIC 12/88 Rev.

Lionville Laboratory Use Only

0305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B						C		D	E	F	G		
Refrigerator #		1	2						2		2	2	2	2		
#/Type Container	Liquid	~~1AGL~~	~~1AGL~~						~~1AG~~							
	Solid	1AGL	1AGL						1AGL		1AGL	1AGL	1AGL	1AGL		
Volume	Liquid															
	Solid	60	125						60		60	125	60	60		
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	Cr Hex	Ic Anions	NO2/NO3	oil + grease		
Lionville Laboratory Use Only		OGCSC 0624+1	0625X 0DRO OGRO						MET ①		ICP 6	INORG ①	IN3N2	IOGGR		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OGCSC 0624+1	0625X 0DRO OGRO	MET ①	ICP 6	INORG ①	IN3N2	IOGGR
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	001	B17124	✓	✓	S	5/20/03	0945	1	1	1	1	1	1	1
	002	B17115			⊥	⊥	0830	1	·	1	1		1	1

Special Instructions: SAF # F03-006
Run Matrix QC on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO3, NO2, PO4, SO4
IN3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel 0624+1~~ Add OGCSC
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ___ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

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

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 ~~TMS-20-03~~ 216-A-10 (C3247) ~~62.5-55.8~~ 52'-54'; 54'-56'	SAF No. F03-006	Air Quality ☐
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 9/5 5/20/03	Offsite Property No. A030240		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A ~~TMS-23-8~~ Radioactive TRLTD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3
Sample No. / Matrix * / Sample Date / Sample Time										
~~B17115~~ ~~SOIL~~ ~~5/20/03~~ ~~0830~~	X	X	X	X	X	X	X		N/A	52803
B17124 / SOIL / 5/20/03 / 0945	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Johansen/Pfister	5/20/03 1317	Received By/Stored In: HO-64-427 REF	5/20/03 1317
Relinquished By/Removed From: HO-64-427 REF	5/20/03 1120	Received By/Stored In: Johansen/Pfister	5/20/03 1120
Relinquished By/Removed From: Johansen/Pfister	5/20/03 1120	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: S. GALE	52803 0800
Relinquished By/Removed From: S. GALE	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: FedEX	5/29/03 1000	Received By/Stored In: JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) Technetium-99; ~~Strontium-89,90 = Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-~~

9SR 5/20/03

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

9SR 5/29/03

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	F03-006-106	Page 1 of 1

Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) ~~52.5-55 R~~ MDS-20-03 52'-54'; 54'-56'	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 02 010	Field Logbook No.: HNF-N-3361 — COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 9SL 5/20/03	Offsite Property No.: RSR 107187	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ MDS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1		1	1	1	1	1	1	1	1	
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time								
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X	
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Johansen/Johansen	5/20/03 1317	Received By/Stored In: HO-64-27 REF	5/20/03 1317
Relinquished By/Removed From: HO-64-27 REF	5/20/03 1120	Received By/Stored In: Johansen/Johansen	5/20/03 1120
Relinquished By/Removed From: Johansen/Johansen	5/20/03 1150	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: SJGALE	52803 0800
Relinquished By/Removed From: SJGALE	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	5-29-03 1000	Received By/Stored In:	

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) Technetium-99; ~~Strontium-89,90 = Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

9SL 5/20/03

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

9SL 5/20/03

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: 5/09/03

F# / SOW# / Release #: F03-000

iboratory SDG #: 0305L520

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? See below	☑ 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 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-03-101 / TRK# 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: J Remy 5/09/03 1000

Laboratory Project Manager:

20

Lionville Laboratory Use Only

0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: QJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125/60			60/60			60/125		60	125/60				
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	Dye (Phenol)	Oil Grease		INORG: Metal	CN	Cr6	TC anions	NO2/NO3			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X ODEO OGEO			OGCSC	IOGGR		MET ①		ICR6	INORG ①	IN3N2			
001	B17116			S	5/27/03	1030	1	1			1	1		1		1	1	1			
002	B17123			⊥	⊥	⊥	1	1			1	1		1		1	1	1			

Special Instructions: SAF # F03-006
Run Matrix QC

MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:

002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).

2.

~~002B,C,E,G Bottle size does not match size~~ indicated on COC.

4.

5.

6.

Lionville Laboratory Use Only

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

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. 4 °C

Relinquished by	Received by	Date	Time
FedEx	J Perry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL REWRITTEN		

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

NOTES:

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Reesa TMJ 5-27-03	Offsite Property No.: 030 226	Bill of Lading/Air Bill No.: SEFOSR	

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ TMJ 5-27-03
N/A
Radiological Tie To: ~~B17116~~ TMJ 5-27-03 (B17116; B17123)

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X	TMJ 5-27-03		
~~B12~~ B17122 TMJ 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X	TMJ 5-27-03		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5/27/03 1415	R.E. Fehn R.E. Fehn	5-27-03 1415
R.E. Fehn R.E. Fehn	1415 5-27-03	IB 3728	1417 5-27-03
R.E. Fehn R.E. Fehn	10 050 IB 5-29-03	R.E. Fehn R.E. Fehn	1006 5-29-03
R.E. Fehn R.E. Fehn	1050 5-29-03	Fed Ex	
Fed Ex	5/30/03 0945	JPerry	5/30/03 0945

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) ~~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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-129~~ Nickel-63; Neptunium-237

TMJ 5-27-03

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	F03-006-114	Page 2 of 2
Collector: Johansen/Pope/Pfister	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: ~~TMD 5-27-03~~ 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03 103	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~TMD 5-27-03~~ ~~EBERLINE SERVICES (Formerly TMA)~~ Hecra	Offsite Property No.: 17030-276	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ Radioactive TILTO: See Below

Special Handling and/or Storage
N/A

Preservation	None	1004C									
Type of Container	aG	aG									
No. of Container(s)	~~TMD 5-27-03~~	1									
Volume	~~mL~~	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See special instruction (7)									
				TILTO:							

Sample No.	Matrix *	Sample Date	Sample Time											
B17123	SOIL	5-27-03	1030	~~5-27-03~~	X		B17133							
B17126	Soil	5-27-03	1030		X		B17133							
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B17134~~							
Re 5.29.03														

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: [illegible] 5-27-03 1445	Received By/Stored In: ERC [illegible] 5-27-03	Date/Time: 1405
Relinquished By/Removed From: [illegible] 5-27-03	Received By/Stored In: [illegible] 5-27-03	Date/Time: 1415
Relinquished By/Removed From: 1B 3728 5-29-03	Received By/Stored In: [illegible] 5-29-03	Date/Time: 1000
Relinquished By/Removed From: ERC [illegible] 5-29-03	Received By/Stored In: 1st Col Ex	Date/Time: 1000
Relinquished By/Removed From: FedEx	Received By/Stored In: JPeny	Date/Time: 5/30/03 0945
Relinquished By/Removed From:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.
(7) VOA-8260A (TCL); VOA-8260A (ADD-ON) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 0305L533

NOTE: 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 # 1
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790794598746	☑ 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 # 2
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-03-103 / 4°C

① No custody seals
② 002C Label says see item (5). This is not a requested item. No bottle was received for item (1), so this bottle was assigned to (1)
002 B, C, E, G - Bottle size doesn't match client c (60 mL to a 125 mL or vice-versa)

Laboratory Sample Custodian: JRemy 5/30/03 0945

Laboratory Project Manager:

24

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124	001	S	03LE0678	05/20/03	06/04/03	06/27/03
B17124	001 MS	S	03LE0678	05/20/03	06/04/03	06/30/03
B17124	001 MSD	S	03LE0678	05/20/03	06/04/03	06/30/03
B17115	002	S	03LE0678	05/20/03	06/04/03	06/10/03

LAB QC:

SBLKUV	MB1	S	03LE0678	N/A	06/04/03	06/09/03
SBLKUV	MB1 BS	S	03LE0678	N/A	06/04/03	06/10/03

JUL 2003
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116	001	S	03LE0678	05/27/03	06/04/03	06/10/03
B17116	001 01	S	03LE0678	05/27/03	06/04/03	06/30/03
B17116	001 MS	S	03LE0678	05/27/03	06/04/03	06/10/03
B17116	001 MSD	S	03LE0678	05/27/03	06/04/03	06/10/03
B17123	002	S	03LE0678	05/27/03	06/04/03	06/27/03

LAB QC:

SBLKUV	MB1	S	03LE0678	N/A	06/04/03	06/09/03
SBLKUV	MB1 BS	S	03LE0678	N/A	06/04/03	06/10/03

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD F03-006
LVL #: 0306L520 & 0306L533
SDG/SAF # H2242/ F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-29,30-2003

SEMIVOLATILE

Four (4) soil samples were collected on 05-20,27-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 06-04-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 06-09,10,27,30-2003.

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. Samples were extracted and analyzed within required holding time.

3. Non-target compounds were detected in the samples.

4. Samples B17124 and B17123 required a 100-fold dilution due to high levels of target compounds.

5. All obtainable surrogate recoveries were within EPA QC limits.

6. Four (4) of twenty-six (26) obtainable matrix spike recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. All blank spike recoveries were within EPA QC limits.

8. Internal standard area and retention time criteria were met.

9. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

07-10-03
Date

som\gorup\data\bna\tnu-hanford-0305-520&533.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 2 6 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03M5700

Initiator: Robert Carden
Date: 7.1.03
Client: TMV Hanford

Batch: 03052533
Samples: 0015, 0017
Method: SW846/MCAWW/CLP/

Parameter: 06254
Matrix: Soil
Prep Batch: 03GE0678

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)

Several Spikes below QC limits

BS ok

2. Known or Probable Causes(s) Matrix effect

3. Discussion and Proposed Action Other Description: Narrative Report

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

4. Project Manager Instructions...signature/date: _____ 6/30/03

__ 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: _____ 7/10/03 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
1	X Project Mgr: Stone/Johnson/Haslett		GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	2	X MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

GLOSSARY

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection 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. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike 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	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

MP - Missed Peak: manually added peak not found by automatic quan program.

PA - Peak Assignment: quan report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 07/10/03 11:51

RFW Batch Number: **0305L520** — Client: **TNUHANFORD F03-006 H2242** — Work Order: 11343606001 — Page: 1a

	Cust ID:	B17124	B17124	B17124	B17115	SBLKUV	SBLKUV BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	03LE0678-MB1	03LE0678-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	100	100	100	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	0 D %	0 D %	0 D %	67 %	73 %	79 %
	2-Fluorobiphenyl	0 D %	0 D %	0 D %	70 %	71 %	79 %
	Terphenyl-d14	0 D %	0 D %	0 D %	84 %	92 %	90 %
	Phenol-d5	0 D %	0 D %	77 %	60 %	73 %	79 %
	2-Fluorophenol	0 D %	0 D %	0 D %	53 %	64 %	72 %
	2,4,6-Tribromophenol	0 D %	0 D %	0 D %	78 %	64 %	83 %
		fl	fl	fl	fl	fl	fl
Phenol		38000 U	75 %	80 %	380 U	330 U	77 %
bis(2-Chloroethyl)ether		38000 U	38000 U	38000 U	380 U	330 U	330 U
2-Chlorophenol		38000 U	80 %	80 %	380 U	330 U	71 %
1,3-Dichlorobenzene		38000 U	38000 U	38000 U	380 U	330 U	330 U
1,4-Dichlorobenzene		38000 U	0 D %	0 D %	380 U	330 U	74 %
1,2-Dichlorobenzene		38000 U	38000 U	38000 U	380 U	330 U	330 U
2-Methylphenol		38000 U	38000 U	38000 U	380 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		38000 U	38000 U	38000 U	380 U	330 U	330 U
3- and/or 4-Methylphenol		38000 U	38000 U	38000 U	380 U	330 U	330 U
N-Nitroso-di-n-propylamine		38000 U	0 D %	0 D %	380 U	330 U	76 %
Hexachloroethane		38000 U	38000 U	38000 U	380 U	330 U	330 U
Nitrobenzene		38000 U	38000 U	38000 U	380 U	330 U	330 U
Isophorone		38000 U	38000 U	38000 U	380 U	330 U	330 U
2-Nitrophenol		38000 U	38000 U	38000 U	380 U	330 U	330 U
2,4-Dimethylphenol		38000 U	38000 U	38000 U	380 U	330 U	330 U
bis(2-Chloroethoxy)methane		38000 U	38000 U	38000 U	380 U	330 U	330 U
2,4-Dichlorophenol		38000 U	38000 U	38000 U	380 U	330 U	330 U
1,2,4-Trichlorobenzene		38000 U	0 D %	0 D %	380 U	330 U	77 %
Naphthalene		38000 U	38000 U	38000 U	380 U	330 U	330 U
4-Chloroaniline		38000 U	38000 U	38000 U	380 U	330 U	330 U
Hexachlorobutadiene		38000 U	38000 U	38000 U	380 U	330 U	330 U
4-Chloro-3-methylphenol		38000 U	0 D %	0 D %	380 U	330 U	73 %
2-Methylnaphthalene		38000 U	38000 U	38000 U	380 U	330 U	330 U
Hexachlorocyclopentadiene		38000 U	38000 U	38000 U	380 U	330 U	330 U
2,4,6-Trichlorophenol		38000 U	38000 U	38000 U	380 U	330 U	330 U
2,4,5-Trichlorophenol		96000 U	96000 U	96000 U	940 U	840 U	840 U

*= Outside of EPA CLP QC limits.

Cust ID:	B17124		B17124		B17124		B17115		SBLKUV		SBLKUV BS	
RFW#:	001		001 MS		001 MSD		002		03LE0678-MB1		03LE0678-MB1	
2-Chloronaphthalene	38000	U	38000	U	38000	U	380	U	330	U	330	U
2-Nitroaniline	96000	U	96000	U	96000	U	940	U	840	U	840	U
Dimethylphthalate	38000	U	38000	U	38000	U	380	U	330	U	330	U
Acenaphthylene	38000	U	38000	U	38000	U	380	U	330	U	330	U
2,6-Dinitrotoluene	38000	U	38000	U	38000	U	380	U	330	U	330	U
3-Nitroaniline	96000	U	96000	U	96000	U	940	U	840	U	840	U
Acenaphthene	38000	U	0	D %	0	D %	380	U	330	U	76	%
2,4-Dinitrophenol	96000	U	96000	U	96000	U	940	U	840	U	840	U
4-Nitrophenol	96000	U	0	D %	0	D %	940	U	840	U	91	%
Dibenzofuran	38000	U	38000	U	38000	U	380	U	330	U	330	U
2,4-Dinitrotoluene	38000	U	0	D %	0	D %	380	U	330	U	89	%
Diethylphthalate	38000	U	38000	U	38000	U	380	U	330	U	330	U
4-Chlorophenyl-phenylether	38000	U	38000	U	38000	U	380	U	330	U	330	U
Fluorene	38000	U	38000	U	38000	U	380	U	330	U	330	U
4-Nitroaniline	96000	U	96000	U	96000	U	940	U	840	U	840	U
4,6-Dinitro-2-methylphenol	96000	U	96000	U	96000	U	940	U	840	U	840	U
N-Nitrosodiphenylamine (1)	38000	U	38000	U	38000	U	380	U	330	U	330	U
4-Bromophenyl-phenylether	38000	U	38000	U	38000	U	380	U	330	U	330	U
Hexachlorobenzene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Pentachlorophenol	96000	U	0	D %	0	D %	940	U	840	U	94	%
Phenanthrene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Anthracene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Carbazole	38000	U	38000	U	38000	U	380	U	330	U	330	U
Di-n-butylphthalate	38000	U	38000	U	38000	U	380	U	330	U	330	U
Fluoranthene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Pyrene	38000	U	0	D %	0	D %	380	U	330	U	84	%
Butylbenzylphthalate	38000	U	38000	U	38000	U	380	U	330	U	330	U
3,3'-Dichlorobenzidine	38000	U	38000	U	38000	U	380	U	330	U	330	U
Benzo(a)anthracene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Chrysene	38000	U	38000	U	38000	U	380	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	38000	U	38000	U	38000	U	380	U	330	U	330	U
Di-n-octyl phthalate	38000	U	38000	U	38000	U	380	U	330	U	330	U
Benzo(b)fluoranthene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Benzo(k)fluoranthene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Benzo(a)pyrene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Dibenz(a,h)anthracene	38000	U	38000	U	38000	U	380	U	330	U	330	U
Benzo(g,h,i)perylene	38000	U	38000	U	38000	U	380	U	330	U	330	U
2-Butoxyethanol	38000	U	38000	U	38000	U	380	U	330	U	330	U
Benzyl alcohol	38000	U	38000	U	38000	U	380	U	330	U	330	U

*= Outside of EPA CLP QC limits.

Cust ID:	B17124	B17124	B17124	B17115	SBLKUV	SBLKUV BS
RFW#:	001	001 MS	001 MSD	002	03LE0678-MB1	03LE0678-MB1
Tributylphosphate	290000	1700000 E	1600000 E	140 J	330 U	330 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 07/10/03 11:51

RFW Batch Number: 0305L520 — Client: TNUHANFORD F03-006 H2242 — Work Order: 11343606001 — Page: 2a

	Cust ID:	B17116	B17116	B17123	B17116	B17116
Sample Information	RFW#:	533-001	533-001 DL	533-002	533-001 MS	533-001 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	50.0	100	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	65 %	0 D %	0 D %	69 %	71 %
	2-Fluorobiphenyl	68 %	69 %	0 D %	71 %	78 %
	Terphenyl-d14	79 %	77 %	0 D %	86 %	95 %
	Phenol-d5	75 %	56 %	0 D %	83 %	87 %
	2-Fluorophenol	63 %	52 %	0 D %	65 %	68 %
	2,4,6-Tribromophenol	68 %	0 D %	0 D %	64 %	80 %
Phenol		360 U	18000 U	36000 U	81 %	85 %
bis(2-Chloroethyl)ether		360 U	18000 U	36000 U	360 U	360 U
2-Chlorophenol		360 U	18000 U	36000 U	66 %	68 %
1,3-Dichlorobenzene		360 U	18000 U	36000 U	360 U	360 U
1,4-Dichlorobenzene		360 U	18000 U	36000 U	66 %	66 %
1,2-Dichlorobenzene		360 U	18000 U	36000 U	360 U	360 U
2-Methylphenol		360 U	18000 U	36000 U	360 U	360 U
2,2'-oxybis(1-Chloropropane)		360 U	18000 U	36000 U	360 U	360 U
3- and/or 4-Methylphenol		360 U	18000 U	36000 U	360 U	360 U
N-Nitroso-di-n-propylamine		360 U	18000 U	36000 U	66 %	66 %
Hexachloroethane		360 U	18000 U	36000 U	360 U	360 U
Nitrobenzene		360 U	18000 U	36000 U	360 U	360 U
Isophorone		360 U	18000 U	36000 U	360 U	360 U
2-Nitrophenol		360 U	18000 U	36000 U	360 U	360 U
2,4-Dimethylphenol		360 U	18000 U	36000 U	360 U	360 U
bis(2-Chloroethoxy)methane		360 U	18000 U	36000 U	360 U	360 U
2,4-Dichlorophenol		360 U	18000 U	36000 U	360 U	360 U
1,2,4-Trichlorobenzene		360 U	18000 U	36000 U	69 %	69 %
Naphthalene		360 U	18000 U	36000 U	360 U	360 U
4-Chloroaniline		360 U	18000 U	36000 U	360 U	360 U
Hexachlorobutadiene		360 U	18000 U	36000 U	360 U	360 U
4-Chloro-3-methylphenol		360 U	18000 U	36000 U	10 * %	6 * %
2-Methylnaphthalene		360 U	18000 U	36000 U	190 J	110 J
Hexachlorocyclopentadiene		360 U	18000 U	36000 U	360 U	360 U
2,4,6-Trichlorophenol		360 U	18000 U	36000 U	360 U	360 U
2,4,5-Trichlorophenol		900 U	45000 U	90000 U	900 U	900 U

*= Outside of EPA CLP QC limits.

Cust ID:	B17116		B17116		B17123		B17116		B17116	
RFW#:	533-001		533-001 DL		533-002		533-001 MS		533-001 MSD	
2-Chloronaphthalene	360	U	18000	U	36000	U	360	U	360	U
2-Nitroaniline	900	U	45000	U	90000	U	900	U	900	U
Dimethylphthalate	360	U	18000	U	36000	U	360	U	360	U
Acenaphthylene	360	U	18000	U	36000	U	360	U	360	U
2,6-Dinitrotoluene	360	U	18000	U	36000	U	360	U	360	U
3-Nitroaniline	900	U	45000	U	90000	U	900	U	900	U
Acenaphthene	360	U	18000	U	36000	U	75	%	78	%
2,4-Dinitrophenol	900	U	45000	U	90000	U	900	U	900	U
4-Nitrophenol	900	U	45000	U	90000	U	3 *	%	0 *	%
Dibenzofuran	360	U	18000	U	36000	U	360	U	360	U
2,4-Dinitrotoluene	360	U	18000	U	36000	U	84	%	85	%
Diethylphthalate	360	U	18000	U	36000	U	360	U	360	U
4-Chlorophenyl-phenylether	360	U	18000	U	36000	U	360	U	360	U
Fluorene	360	U	18000	U	36000	U	360	U	360	U
4-Nitroaniline	900	U	45000	U	90000	U	900	U	900	U
4,6-Dinitro-2-methylphenol	900	U	45000	U	90000	U	900	U	900	U
N-Nitrosodiphenylamine (1)	360	U	18000	U	36000	U	360	U	360	U
4-Bromophenyl-phenylether	360	U	18000	U	36000	U	360	U	360	U
Hexachlorobenzene	360	U	18000	U	36000	U	360	U	360	U
Pentachlorophenol	20	J	45000	U	90000	U	89	%	94	%
Phenanthrene	360	U	18000	U	36000	U	360	U	360	U
Anthracene	360	U	18000	U	36000	U	360	U	360	U
Carbazole	360	U	18000	U	36000	U	360	U	360	U
Di-n-butylphthalate	360	U	18000	U	36000	U	360	U	360	U
Fluoranthene	360	U	18000	U	36000	U	360	U	360	U
Pyrene	360	U	18000	U	36000	U	78	%	81	%
Butylbenzylphthalate	360	U	18000	U	36000	U	360	U	360	U
3,3'-Dichlorobenzidine	360	U	18000	U	36000	U	360	U	360	U
Benzo(a)anthracene	360	U	18000	U	36000	U	360	U	360	U
Chrysene	360	U	18000	U	36000	U	360	U	360	U
bis(2-Ethylhexyl)phthalate	140	J	18000	U	36000	U	140	J	150	J
Di-n-octyl phthalate	360	U	18000	U	36000	U	360	U	360	U
Benzo(b)fluoranthene	360	U	18000	U	36000	U	360	U	360	U
Benzo(k)fluoranthene	360	U	18000	U	36000	U	360	U	360	U
Benzo(a)pyrene	360	U	18000	U	36000	U	360	U	360	U
Indeno(1,2,3-cd)pyrene	360	U	18000	U	36000	U	360	U	360	U
Dibenz(a,h)anthracene	360	U	18000	U	36000	U	360	U	360	U
Benzo(g,h,i)perylene	360	U	18000	U	36000	U	360	U	360	U
2-Butoxyethanol	26	J	18000	U	36000	U	360	U	360	U
Benzyl alcohol	360	U	18000	U	36000	U	360	U	360	U

*= Outside of EPA CLP QC limits.

Cust ID:	B17116	B17116	B17123	B17116	B17116
RFW#:	533-001	533-001 DL	533-002	533-001 MS	533-001 MSD
Tributylphosphate	59000 E	90000 D	180000	65000 E	71000 E

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17124

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L520-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D062718

Level: (low/med) LOW

Date Received: 05/29/03

% Moisture: 13 decanted: (Y/N)__

Date Extracted: 06/04/03

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/27/03

Injection Volume: 2.0(uL)

Dilution Factor: 100

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	9.792	20000	J
2.	ALKANE	11.355	90000	J
3.	ALKANE	12.830	400000	J
4.	ALKANE	14.192	300000	J
5.	ALKANE	15.467	20000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17115

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L520-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D061008

Level: (low/med) LOW

Date Received: 05/29/03

% Moisture: 11 decanted: (Y/N)__

Date Extracted: 06/04/03

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/10/03

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.984	600	JB
2.	ALDOL CONDENSATE	3.349	200	JAB
3.	ALDOL CONDENSATE	3.923	30000	JAB
4. 79-34-5	1,1,2,2-TETRACHLOROETHANE	5.079	80	JBN
5.	ALKANE	11.122	100	J
6.	ALKANE	12.478	100	J
7.	UNKNOWN	21.564	80	J
8.	ALKANE	22.929	80	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17116

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L533-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D061009

Level: (low/med) LOW

Date Received: 05/30/03

% Moisture: 8 decanted: (Y/N)__

Date Extracted: 06/04/03

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/10/03

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	3.923	30000	JA
2.	ALKANE	9.757	20000	J
3.	ALKANE	9.957	4000	J
4.	ALKANE	10.140	8000	J
5.	ALKANE	10.349	3000	J
6.	ALKANE	10.664	10000	J
7.	ALKANE	10.775	10000	J
8.	ALKANE	10.948	6000	J
9.	ALKANE	11.270	30000	J
10.	ALKANE	12.574	20000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17123

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L533-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D062720

Level: (low/med) LOW

Date Received: 05/30/03

% Moisture: 8 decanted: (Y/N)__

Date Extracted: 06/04/03

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/27/03

Injection Volume: 2.0(uL)

Dilution Factor: 100

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.225	50000	JAB
2.	ALKANE	11.354	50000	J
3.	ALKANE	11.695	30000	J
4.	ALKANE	11.764	30000	J
5.	ALKANE	12.262	40000	J
6.	ALKANE	12.384	50000	J
7.	ALKANE	12.594	20000	J
8.	ALKANE	12.812	100000	J
9.	ALKANE	13.179	20000	J
10.	ALKANE	14.183	80000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKUV

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2242

Matrix: (soil/water) SOIL

Lab Sample ID: 03LE0678-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D060918

Level: (low/med) LOW

Date Received: 06/04/03

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 06/04/03

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/09/03

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.177	400	J
2.	ALDOL CONDENSATE	3.551	300	JA
3.	ALDOL CONDENSATE	4.125	20000	JA
4. 79-34-5	1,1,2,2-TETRACHLOROETHANE	5.290	70	JN

(6) VOH BNA ...

Lionville Laboratory Use Only

C1305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B						C		D	E	F	G		
Refrigerator #		1	2						2		2	2	2	2		
#/Type Container	Liquid	~~1AGL~~	~~1AGL~~						~~1AGL~~							
	Solid	1AGL	1AGL						1AGL		1AGL	1AGL	1AGL	1AGL		
Volume	Liquid															
	Solid	60	125						60		60	125	60	60		
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Cr Hex	IC Anions	NO2/NO3	Oil + Grease		
		Lionville Laboratory Use Only														
		OGCSC 062411 062411	0625X ODRO OGPO						MET ①		ICR6	INORG ①	IN3N2	IOGGR		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
S - Soil	001	B17124	✓	✓	S	5/20/03	0945	1	1						1		1	1	1	1		
SE - Sediment	002	B17115			⊥	⊥	0830	1							1		1		1	1		
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 on -001

MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ①: IC: Cl, F, NO3, NO2, PO4, SO4
INH3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel 062411~~ Add OGCSC
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

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

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 TMS-20-03 216-A-10 (C3247) ~~63.5-55-R~~ 52'-54'; 54'-56'	SAF No. F03-006	
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/20/03	Offsite Property No. A030240		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A TMS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time									
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~N/A~~	52803
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	Received By/Stored In	
Johansen/Pope/Pfister	HO-64-427 REF	5/20/03 1317
HO-64-427 REF	Johansen/Pope/Pfister	5/20/03 1120
Johansen/Pope/Pfister	REF 1A 3728	5/20/03 1150
REF 1A 3728	SJ GALE	52803 0800
SJ GALE	FED EX	52803 0800
FED EX	JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) ~~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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

SJG 5/20/03

SJG 5/20/03

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	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location ~~TMS 5-20-03~~ 216-A-10 (C3247) ~~52.5-55 ft~~ 52'-54'; 54'-56'		SAF No. F03-006
Ice Chest No. ERC 02 010	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 9SV 5/20/03	Offsite Property No. RSR 107187		Bill of Lading/Air Bill No. N/A

Price Code 8N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ ~~TMS 5-23-03~~ Radioactive TLD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1		1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X			
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~5/28/03~~		

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5/20/03 1317	HO 6427 REF	5/20/03 1317
HO 6427 REF	5/20/03 1120	[illegible]	5/20/03 1120
[illegible]	5/20/03 1150	REF 1A 3728	5/20/03 1150
REF 1A 3728	52803 0800	S GALE	52803 0800
S GALE	52803 0800	FED EX	
FED EX	5-29-03 1000	[illegible]	

SPECIAL INSTRUCTIONS

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-~~

9SV 5/20/03

Matrix *

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

9SV 5/20/03

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

PULEE 011 (03/01/2002)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

ENT: TNU Hanford

hase Order/Project:

DATE: 5/09/03

/ SOW# / Release #: F03-006

oratory SDG #: C3054520

TE: 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? See below	☑ 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 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-03-101 / TRK# 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: JRemy 5/09/03 1000

Laboratory Project Manager:

22

Lionville Laboratory Use Only

0305L-533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: OJ

QC: SPEX Del: STD TAT: 30 days

Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125/60			60/60	60		60/125		60	125/60	60			
Preservatives																

ANALYSES REQUESTED →

	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb	Cyanide	O&G		Metal	CN	Cr 6	TC Anions	NO2/NO3			
Lionville Laboratory Use Only	0624X	0625X 0D80 0G80			0GC5C	1DGGR		MET ①		ICR6	INORG ①	INN2			

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											
001	B17116			S	5/27/03	1030	1	1			1	1	1		1	1	1
002	B17123			⊥	⊥	⊥	1	1			1	1	1		1	1	1

Special Instructions: SAF # F03-006

Run Matrix QC

MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:

002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned to (1).

2.

002B,C,E,G Bottle size does not match size indicated on COC.

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # See below
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. 4 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	5/30/03	0945

Relinquished by	Received by	Date	Time
ORIGINAL			

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

NOTES:

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1

Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Berra MJS 5-27-03	Offsite Property No.: 030 226		Bill of Lading/Air Bill No.: SEFOSPC

POSSIBLE SAMPLE HAZARDS/REMARKS: B17133; ~~B17134~~ MJS 5-27-03
N/A
Radiological Tie To: ~~B17186~~ (B17116; B17123) MJS 5-27-03

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X	MJS 5-27-03		
~~B12 B17122~~ 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X	MJS 5-27-03		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: FH	5/27/03 1415	Received By/Stored In: ERC	5-27-03 1415
Relinquished By/Removed From	1415 5-27-03	Received By/Stored In	1415 5-27-03
Relinquished By/Removed From	1000 IB 5-29-03	Received By/Stored In	1000 5-29-03
Relinquished By/Removed From: ERC	1000 5-29-03	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	5/30/03 0945	Received By/Stored In	5/30/03 0945
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)
(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) ~~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~~
(6) ~~Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237~~

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

JMP 5-27-03

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	F03-006-114	Page 2 of 2
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'	SAF No.: F03-006	Air Quality: ☐
Ice Chest No.: ERC 03 102	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Becca	Offsite Property No.: 17030-276	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ Radioactive TicTD: See Below

Special Handling and/or Storage
N/A

Preservation	None	COOL4C									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See special instruction (7)									

Sample No.	Matrix *	Sample Date	Sample Time										
B17123	SOIL	5-27-03	1030		X		B7133						
B17126	Soil	5-27-03	1030		X		B7133						
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B7134~~						
5-29-03													

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: [illegible] 5-27-03 1415	Received By/Stored In: ERC	Date/Time: 1415
Relinquished By/Removed From: [illegible] 5-27-03	Received By/Stored In: [illegible]	Date/Time: 1415 5-27-03
Relinquished By/Removed From: IB 3728 5-29-03	Received By/Stored In: [illegible] 5-29-03	Date/Time: 1000
Relinquished By/Removed From: ERC	Received By/Stored In: 1st Col Ex	Date/Time: 1000 5-29-03
Relinquished By/Removed From: FedEx 5/30/03 0945	Received By/Stored In: JPerry	Date/Time: 5/30/03 0945
Relinquished By/Removed From:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.
(7) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

Matrix *
S=Soil
SE=Sediment
SO=Solid
SJ=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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 0305L533

NOTE: 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 # 1
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded? 7907 9459 8746	☑ 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 # 2
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-03-103 / 4°C

① No custody seals

② 002C Label says see item (5). This is not a requested item. No bottle was recieved for item (1), so this bottle was assigned to (1)

002B,C,E,G - Bottle size does not match client (60mL in a 125 mL or vice-versa)

Laboratory Sample Custodian: JRemy 5/30/03 0945

Laboratory Project Manager:

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124	001	S	03LE0652	05/20/03	05/30/03	07/08/03
B17124	001 MS	S	03LE0652	05/20/03	05/30/03	07/08/03
B17124	001 MSD	S	03LE0652	05/20/03	05/30/03	07/08/03
B17115	002	S	03LE0674	05/20/03	06/04/03	06/21/03
B17115	002 MS	S	03LE0674	05/20/03	06/04/03	06/21/03
B17115	002 MSD	S	03LE0674	05/20/03	06/04/03	06/21/03

LAB QC:

BLK	MB1	S	03LE0652	N/A	05/30/03	06/02/03
BLK	MB1 BS	S	03LE0652	N/A	05/30/03	06/02/03
BLK	MB1	S	03LE0674	N/A	06/04/03	06/21/03
BLK	MB1 BS	S	03LE0674	N/A	06/04/03	06/21/03

JUL 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L520
SDG/SAF #: H2242/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-29-03

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 05-20-03.

The samples and their associated QC samples were extracted on 05-30-02 and 06-04-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-02,21-03 and 07-08-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D.

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. All method blanks were below the reporting limits for all target compounds.
4. All obtainable surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All obtainable matrix spike recoveries were within acceptance criteria. The unobtainable matrix spike recoveries were to the dilution required for analysis.
7. Sample B17124 and its matrix QC required 100-fold instrument dilutions due to the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 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

7/10/03
Date

pef\r:\group\data\dro\tnu hanford\05L-520.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 10 pages.

GLOSSARY OF DIESEL RANGE ORGANICS 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.

GLOSSARY OF DIESEL RANGE ORGANICS DATA

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.

TABLE OF CONTENTS

DIESEL RANGE ORGANICS

I. Lab Chron .....

II. Table of Contents .....

III. Case Narrative .....

IV. Shipping, Receiving, and Custody Record .....

V. Data Summary/Sample QC .....

VI. Sample Data, for each Sample .....

VII. Calibration Standard Data .....

VIII. Raw QC Data: Blank and Matrix Spike Data .....

IX. Analysis Run Logs .....

X. Standards Preparation Record .....

XI. Preparation Logs .....

XII. Other/Miscellaneous .....

LIONVILLE LABORATORY INC.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/09/03 14:27

RFW Batch Number: **0305L520** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17124	B17124	B17124	B17115	B17115	B17115
Sample Information	RFW#:	001	001 MS	001 MSD	002	002 MS	002 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	100	100	100	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	D %	D %	D %	75 %	80 %	107 %
Diesel Range Organics		10000	D %	D %	13.6 U	88 %	107 %
Kerosene		1370 U	1370 U	1370 U	13.6 U	27.1 U	27.1 U

	Cust ID:	BLK	BLK BS	BLK	BLK BS
Sample Information	RFW#:	03LE0652-MB1	03LE0652-MB1	03LE0674-MB1	03LE0674-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	65 %	63 %	89 %	69 %
Diesel Range Organics		12.0 U	58 %	12.0 U	69 %
Kerosene		12.0 U	12.0 U	12.0 U	12.0 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

7/8/03

Lionville Laboratory Use Only
0305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: ~~TMU Hanford~~ F03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B					C		D	E	F	G		
Refrigerator #		1	2					2		2	2	2	2		
#/Type Container	Liquid	~~1AGL~~	~~1AGL~~					~~1AG~~							
	Solid	1AGL	1AGL					1AGL		1AGL	1AGL	1AGL	1AGL		
Volume	Liquid														
	Solid	60	125					60		60	125	60	60		
Preservatives															
ANALYSES REQUESTED →		ORGANIC						INORG		Cr Hex	Ic Anions	NO2 NO3	Oil + Grease		
		VOA	BNA	Pest/ PCB	Herb			Metal	CN						
Lionville Laboratory Use Only		0625C 0624+0624H	0625X 0DRO 0GRO					MET ①		ICR 6	INORG ①	IN3N2	IOGGR		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0625C 0624+0624H	0625X 0DRO 0GRO					MET ①		ICR 6	INORG ①	IN3N2	IOGGR		
S - Soil	001	B17124	✓	✓	S	5/20/03	0945	1	1					1		1	1	1	1		
SE - Sediment	002	B17115			⊥	⊥	0830	1						1		1		1	1		
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 on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO3, NO2, PO4, SO4
IN H3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel~~ 0624H Add OGCSC
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ___ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) ~~63.5-55.5~~ 52'-54'; 54'-56' MDS-20-03	SAF No.: F03-006	
Ice Chest No.: ERC 03 101	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/20/03	Offsite Property No.: A030240		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A MDS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	1	
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time								
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~NA~~	~~52803~~
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: TMJohansen/JMPfister	5/20/03 1317	Received By/Stored In: HO-64-427 RCF	5/20/03 1317
Relinquished By/Removed From: HO-64-427 RCF	5/20/03 1120	Received By/Stored In: TMJohansen/JMPfister	5/20/03 1120
Relinquished By/Removed From: TMJohansen/JMPfister	5/20/03 1120	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: SJGALE	52803 0800
Relinquished By/Removed From: SJGALE	52803 0800	Received By/Stored In: FEDEX	
Relinquished By/Removed From: FedEX	5/29/03 1000	Received By/Stored In: JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr, Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-~~

SJGALE 5/20/03

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	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location MDS-20-03 216-A-10 (C3247) ~~52.5-55 R~~ 52'-54'; 54'-56'		SAF No. F03-006
Ice Chest No. ERC-02 010	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RERA ~~SPERLINE SERVICES (Formerly TMA)~~ 9Sr 5/20/03	Offsite Property No. RSR 107187		Bill of Lading/Air Bill No. N/A

Price Code 8N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A MDS-23-03 Radioactive TLD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1		1	1	1	1	1	1	1	1	
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time								
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X	
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: LC Hulstrom/Johansen/Pope/Pfister	5/20/03 1317	Received By/Stored In: HO-64-427 REF	5/20/03 1317
Relinquished By/Removed From: HO-64-427 REF	5/20/03 1120	Received By/Stored In: LC Hulstrom/Johansen/Pope/Pfister	5/20/03 1120
Relinquished By/Removed From: LC Hulstrom/Johansen/Pope/Pfister	5/20/03 1150	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: SJ GALE	52803 0800
Relinquished By/Removed From: SJ GALE	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	5-29-03 1000	Received By/Stored In:	

SPECIAL INSTRUCTIONS 9Sr 5/20/03

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)
(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
~~(6) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

9Sr 5/20/03

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

JENT: TNU Hanford

chase Order/Project:

DATE: 5/29/03

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

boratory SDG #: 03054520

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? See below	☑ 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 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-03-101 / Airbill 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: JRenny 5/29/03 1000

Laboratory Project Manager:

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116	001	S	03LE0662	05/27/03	06/02/03	06/30/03
B17116	001 MS	S	03LE0662	05/27/03	06/02/03	06/30/03
B17116	001 MSD	S	03LE0662	05/27/03	06/02/03	06/30/03
B17123	002	S	03LE0662	05/27/03	06/02/03	07/08/03
LAB QC:						
BLK	MB1	S	03LE0662	N/A	06/02/03	06/30/03
BLK	MB1 BS	S	03LE0662	N/A	06/02/03	06/30/03

7/10/03

JUL 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L533
SDG/SAF #: H2242/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-30-03

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 05-27-03.

The samples and their associated QC samples were extracted on 06-02-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-30-03 and 07-08-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D.

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 obtainable surrogate recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. Matrix spike recoveries were unobtainable due to the dilution required for analysis.
7. All samples and the matrix QC required instrument dilutions due to the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 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

7/10/03
Date

pef\r:\group\data\dro\tnu hanford\05L-533.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 9 pages.

GLOSSARY OF DIESEL RANGE ORGANICS 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.

GLOSSARY OF DIESEL RANGE ORGANICS DATA

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.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/09/03 15:15

RFW Batch Number: **0305L533** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17116	B17116	B17116	B17123	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	03LE0662-MB1	03LE0662-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	10.0	10.0	10.0	100	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	D % fl	D % fl	D % fl	D % fl	76 % fl	70 % fl
Diesel Range Organics		131 U	D %	D %	1300 U	12.0 U	71 %
Kerosene		700	580	760	6000	12.0 U	12.0 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: 0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INL Hanford F03-006
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30 days
Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125/60			60/60	60		60/125		60	125/60	60			
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	Oil (Hydro Carbon)	Oil & grease		INORG: Metal	CN	Cr 6	TC, Anions	NO2/NO3			
		Lionville Laboratory Use Only: 0624X	0625X ODBO OGRO			OGCSC	IOGGR		MET ①		ICR6	INORG(1)	INN2			

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	0624X	0625X ODBO	OGRO		OGCSC	IOGGR	MET ①		ICR6	INORG(1)	INN2			
001	B17116			S	5/27/03	1030	1	1			1	1	1		1	1	1			
002	B17123			⊥	⊥	⊥	1	1			1	1	1		1	1	1			

Special Instructions: SAF # F03-006
Run Matrix QC

MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO_3 NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:
002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).
2.
002B,C,E,G Bottle size does not match size indicated on COC.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # See below
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. 4 °C

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record Y or N
NOTES:

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ TMS 5-27-03 Rezra	Offsite Property No.: 030 276	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ TMS 5-27-03
N/A
Radiological Tie To: ~~B17116~~ TMS 5-27-03 (B17116; B17123)

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X		TMS 5-27-03	
B12 ~~B17122~~ TMS 5-27-03 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X		TMS 5-27-03	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TMS 5/27/03	5/27/03 1415	Received By/Stored In: ERC R. Fellows R. Fellows	5-27-03 1415
Relinquished By/Removed From: R. Fellows R. Fellows	5-27-03 1415	Received By/Stored In: IB 3728	5-27-03 1415
Relinquished By/Removed From: R. Fellows R. Fellows	IB 5-29-03 1000	Received By/Stored In: R. Fellows R. Fellows	5-29-03 1000
Relinquished By/Removed From: ERC R. Fellows R. Fellows	5-29-03 1000	Received By/Stored In: Fed Ex	Date/Time
Relinquished By/Removed From: Fed Ex	5/30/03 0945	Received By/Stored In: JPerry	5/30/03 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129~~ Nickel-63; Neptunium-237

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

TMS 5-27-03

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	F03-006-114	Page 2 of 2

Collector Johansen/Pope/Pfister	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 ~~TMS 5-27-03~~ 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'	SAF No. F03-006	Air Quality ☐
Ice Chest No. ERC 03 102	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To ~~TMS 5-27-03~~ ~~EBERLINE SERVICES (Formerly TMA)~~ Becca	Offsite Property No. 17030-276		Bill of Lading/Air Bill No. SEE OSR

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Radioactive TILTD: See Below

Special Handling and/or Storage

N/A

Preservation	None	1004L									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60 mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See special instruction (7)		TILTD:							

Sample No.	Matrix *	Sample Date	Sample Time									
B17123	SOIL	5-27-03	1030	5-27-03	X		B17133					
B17126	Soil	5-27-03	1030		X		B17133					
~~B17122~~ Re 5-29-03	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B17134~~					

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5-27-03 1445	ERC [illegible]	1445 5-27-03
[illegible]	1415 5-28-03	[illegible]	1415 5-28-03
1B 3728	5-29-03 1000	[illegible]	5-29-03 1000
ERC [illegible]	1000 5-29-03	1st Ex	
FedEx	5/30/03 0945	JPerry	5/30/03 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(7) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 0305L533

NOTE: 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 # (1)
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790794598746	☑ 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 # (2)
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-03-103 / 4°C

(1) No custody seals
(2) 002C Label says see item (5). This is not a requested item. No bottle was received for item (1), so this bottle was assigned to (1)
002B,C,E,G - Bottle size doesnt match client c (60 mL to a 125 mL or vice-versa)

Laboratory Sample Custodian: JRemy 5/30/03 0945

Laboratory Project Manager:

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124	001	S	03LVJ602	05/20/03	N/A	06/02/03
B17115	002	S	03LVJ603	05/20/03	N/A	06/03/03

LAB QC:

TBLKKF	MB1	S	03LVJ602	N/A	N/A	06/02/03
TBLKKF	MB1 BS	S	03LVJ602	N/A	N/A	06/02/03
TBLKKG	MB1	S	03LVJ603	N/A	N/A	06/03/03
TBLKKG	MB1 BS	S	03LVJ603	N/A	N/A	06/03/03
TBLKKG	MB1 BSD	S	03LVJ603	N/A	N/A	06/03/03

7/8/2003

JUL 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD F03-006
LVL #: 0305L520
SDG/SAF#: H2242/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-29-03

GRO

The set of samples consisted of two (2) soil samples collected on 05-20-03.

The samples and their associated QC samples were analyzed according to Lionville Laboratory OPs based on SW-846 method 8015 for Gasoline range organics (GRO) on 06-02,03-03. The analysis met the intent of method WTPH-G.

The following is a summary of the QC results accompanying these 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 analysis have been met.

3. All method blanks were 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. Matrix spike analyses are associated with Lionville batch# 0305L533. A copy of the Sample Discrepancy Report (SDR) associated with the matrix QC for that batch 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. 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

6/20/03
Date

pef\Rrgroup\data\gro\tnu\\05L-520.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 10 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 036C ~~533~~ 219

Initiator: John Lach
Date: 6/21/03
Client: TNU

Batch: 0305L533, 520
Samples: MS
Method: SW846/MCAWW/CLP/

Parameter: Soil
Matrix: GRO
Prep Batch: 03LVJ602, 603

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)

The matrix spike was decreased @ 16% Limit 40%.

2. Known or Probable Causes(s)

There was a large amount of Non GRO compounds which interfered with the GRO pattern.

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:

0305L533-001 was Quantitated using the Interference Area. The matrix QC recoveries were determined by subtracting this Area. A comparision of patterns is provided.

4. Project Manager Instructions...signature/date: 6/23/03

✓ 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: 6/23/03

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)	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

GLOSSARY OF GASOLINE RANGE ORGANICS 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.

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

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.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 06/21/03 13:47

RFW Batch Number: **0305L520** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17124	B17115	TBLKKF	TBLKKF BS	TBLKKG	TBLKKG BS
Sample Information	RFW#:	001	002	03LVJ602-MB1	03LVJ602-MB1	03LVJ603-MB1	03LVJ603-MB1
	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
Fluorobenzene		80 %	98 %	97 %	100 %	100 %	106 %
Gasoline Range Organics (GRO)		33 U	63 U	30 U	105 %	30 U	100 %

	Cust ID:	TBLKKG BSD
Sample Information	RFW#:	03LVJ603-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Fluorobenzene		108 %
Gasoline Range Organics (GRO)		103 %

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

6

[illegible] 6/24/03

Lionville Laboratory Use Only: 0305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMLL Hanford F03-006
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B					C		D	E	F	G		
Refrigerator #		1	2					2		2	2	2	2		
#/Type Container	Liquid	~~1 AGL~~	~~1 AGL~~					~~1 AGL~~							
	Solid	1 AGL	1 AGL					1 AGL		1 AGL	1 AGL	1 AGL	1 AGL		
Volume	Liquid														
	Solid	60	125					60		60	125	60	60		
Preservatives															

ANALYSES REQUESTED →

	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb				Metal	CN	Cr Hex	Ic Anions	NO2/NO3	oil + grease		
Lionville Laboratory Use Only	OGCSC 8260 + 8260B	8270 ODRO OGPO						MET ①		ICP 6	INORG ①	IN3N2	IOGGR		

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	OGCSC	8260	8270	ODRO	OGPO			MET ①		ICP 6	INORG ①	IN3N2	IOGGR		
001	B17124	✓	✓	S	5/20/03	0945	1	1						1		1	1	1	1		
002	B17115			⊥	⊥	0830	1							1		1		1	1		

Special Instructions: SAF # F03-006
Run Matrix QC on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO3, NO2, PO4, SO4
IN H3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel~~ on 8260 ~~0624H~~ Add OGCSC
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ___ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

Relinquished by	Received by	Date	Time
FedEx	J Perry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 ~~TMS 5-20-03~~ 216-A-10 (C3247) ~~62.5-55.R~~ 52'-54'; 54'-56'	SAF No. F03-006	
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~FRERLINE SERVICES (Formerly TMA)~~ 95 5/20/03	Offsite Property No. A030240		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ ~~TMS 5-23-03~~ Radioactive TLD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~/~~	~~N/A~~	~~52803~~
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X	/		

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TMJohansen/TMJohansen	5/20/03 1317	HO-64-27 REF	5/20/03 1317
HO-64-27 REF	5/20/03 1120	TMJohansen/TMJohansen	5/20/03 1120
TMJohansen/TMJohansen	5/20/03 1150	REF 1A 3728	5/20/03 1150
REF 1A 3728	52803 0800	SJGALE	52803 0800
SJGALE	52803 0800	FED EX	
FedEX	5/29/03 1000	JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS 95 5/20/03

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) ~~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~~
(6) ~~Technetium-99; Strontium-89,90 = Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

95 5/20/03

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	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location MDS-20-03 216-A-10 (C3247) ~~52.5-55.0~~ 52'-54'; 54'-56'		SAF No. F03-006
Ice Chest No. ERC-02 010	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/21/03	Offsite Property No. RSR 107187		Bill of Lading/Air Bill No. N/A

Price Code 8N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A MDS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1		1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X			
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~52803~~		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TM Johansen/Pope/Pfister	5/20/03 1317	HO-604-427 REF	5/20/03 1317
Relinquished By/Removed From: HO-604-427 REF	5/20/03 1120	TM Johansen/Pope/Pfister	5/20/03 1120
Relinquished By/Removed From: TM Johansen/Pope/Pfister	5/20/03 1150	REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	S Gale	52803 0800
Relinquished By/Removed From: S Gale	52803 0800	FED EX	
Relinquished By/Removed From: Fed EX	5-29-03 1000		

SPECIAL INSTRUCTIONS

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-~~

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

JENT: TNU Hanford

rchase Order/Project:

DATE: 5/29/03

F# / SOW# / Release #: F03-000

iboratory SDG #: 03054520

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? See below	☑ 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 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-03-101 / TRK# 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: JRemy 5/29/03 1000

Laboratory Project Manager:

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116	001	S	03LVJ602	05/27/03	N/A	06/02/03
B17116	001 MS	S	03LVJ602	05/27/03	N/A	06/02/03
B17116	001 MSD	S	03LVJ602	05/27/03	N/A	06/02/03
B17123	002	S	03LVJ602	05/27/03	N/A	06/02/03
LAB QC:						
TBLKKF	MB1	S	03LVJ602	N/A	N/A	06/02/03
TBLKKF	MB1 BS	S	03LVJ602	N/A	N/A	06/02/03

JUL 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD F03-006
LVL #: 0305L533
SDG/SAF#: H2242/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-30-03

GRO

The set of samples consisted of two (2) soil samples collected on 05-27-03.

The samples and their associated QC samples were analyzed according to Lionville Laboratory OPs based on SW-846 method 8015 for Gasoline range organics (GRO) on 06-02-03. The analysis met the intent of method WTPH-G.

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

1. Please refer to the Sample Receipt Checklist for sample discrepancies in LvLI's sample acceptance policy.

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

3. All method blank was below the reporting limits for all target compounds.

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recovery was within acceptance criteria.

6. One (1) of two (2) matrix spike recoveries was 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. 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

6/25/03
Date

pef\Rrgroup\data\gro\tnu\\05L-533.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 12 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 036C ~~533~~ 219.

Initiator: John Lech. | Batch: 0305L533, 520 | Parameter: Soil
Date: 6/21/03 | Samples: MS | Matrix: GRO
Client: TNU | Method: SW846/MCAWW/CLP/ | Prep Batch: 03LVJ602, 603.

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)

The matrix spike was decreased @ 16% Limit 40%.

2. Known or Probable Causes(s)

There was a large amount of non GRO compounds which interfered with the GRO pattern.

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:

0305L533-001 was quantitated using the interference area. The matrix QC recoveries ~~was (Quantitated)~~ were determined by subtracting the area. A comparision of patterns is provided.

4. Project Manager Instructions...signature/date: _____ 6/23/03

✓ 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: _____ 6/23/03

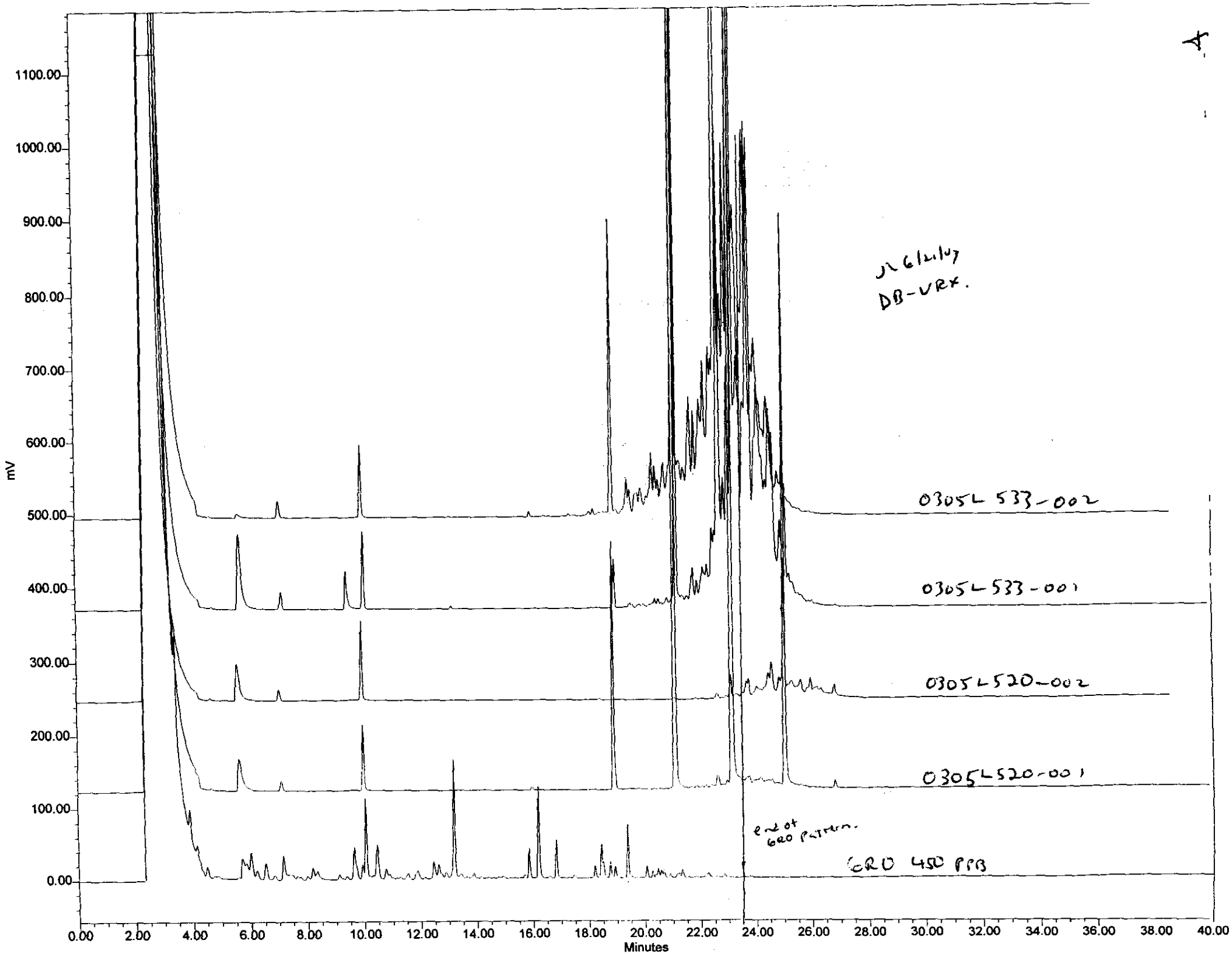
Other Explanation:

__ 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)	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801


mV
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
22.00
24.00
26.00
28.00
30.00
32.00
34.00
36.00
38.00
40.00
Minutes
JL 6/21/07
DB-VRX.
0305L533-002
0305L533-001
0305L520-002
0305L520-001
end of GRO pattern.
GRO 450 PPB

GLOSSARY OF GASOLINE RANGE ORGANICS 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.

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

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.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 06/24/03 11:07

RFW Batch Number: **0305L533** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17116	B17116	B17116	B17123	TBLKKF	TBLKKF BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	03LVJ602-MB1	03LVJ602-MB1
	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
	Fluorobenzene	90 %	65 %	86 %	89 %	97 %	100 %
Gasoline Range Organics (GRO)		1500	16 * %	41 %	75 U	30 U	105 %

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

0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125 60			60	60		60/125		60	125 60				
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	Oil & Grease			INORG: Metal	CN	Cr 6	Tot. Anions	NO2/NO3			
Lionville Laboratory Use Only		0624X	0625X ODBO OGRO			OGCSC	IOGGR		MET ①		ICR6	INORG①	IN3N2			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X ODBO OGRO			OGCSC	IOGGR		MET ①		ICR6	INORG①	IN3N2			
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	001	B17116			S	5/27/03	1030	1	1			1	1		1		1	1	1			
	002	B17123			⊥	⊥	⊥	1	1			1	1		1		1	1	1			

Special Instructions: SAF # F03-006
Run Matrix QC

MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:

002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).

2. ~~002B,C,E,G Bottle size does not match size~~ indicated on COC.

3.

4.

5.

6.

Lionville Laboratory Use Only

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

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. 4 °C

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

NOTES:

Relinquished by	Received by	Date	Time
FedEx	J Perry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1

Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ TMS 5-27-03 Reera	Offsite Property No.: 030 226		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ TMS 5-27-03
N/A
Radiological Tie To: ~~B17186~~ TMS 5-27-03 (B17116; B17123)

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X	TMS 5-27-03		
~~B12 B17122~~ TMS 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X	TMS 5-27-03		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: FH	Date/Time: 5/27/03 1415	Received By/Stored In: ERC	Date/Time: 5-27-03 1415
Relinquished By/Removed From:	Date/Time: 1415 5-27-03	Received By/Stored In: IB 3728	Date/Time: 5-27-03 1415
Relinquished By/Removed From:	Date/Time: 1000 IB 5-29-03	Received By/Stored In:	Date/Time: 1000 5-29-03
Relinquished By/Removed From: ERC	Date/Time: 1000 5-29-03	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 5/30/03 0945	Received By/Stored In: JPCity	Date/Time: 5/30/03 0945
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)
(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
~~(6) Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237~~

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

TMS 5-27-03

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	F03-006-114	Page 2 of 2

Collector Johansen/Pope/Pfister	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 TMD 5-27-03 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'	SAF No. F03-006	
Ice Chest No. ERC 03 102	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To TMD 5-27-03 ~~EBERLINE SERVICES (Formerly TMA)~~ Beccca	Offsite Property No. 17030-276	Bill of Lading/Air Bill No. SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Radioactive TILTO:
See Below

Special Handling and/or Storage

N/A

Preservation	None	1004C									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60 mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See special instruction (7)									
				TILTO:							

Sample No.	Matrix *	Sample Date	Sample Time										
B17123	SOIL	5-27-03	1030		X		B17133						
B17126	Soil	5-27-03	1030		X		B17133						
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B17134~~						
Re 5.29.03													

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From [illegible] 5-27-03 1445	Received By/Stored In ERC R. Fitts R. Fahlby 5.27.03 1445	Date/Time
Relinquished By/Removed From R. Fitts R. Fahlby 5.27.03	Received By/Stored In IB 3728 5.27.03	Date/Time 1415
Relinquished By/Removed From IB 3728 5.29.03	Received By/Stored In R. Fitts R. Fahlby 5.29.03	Date/Time ~~1000~~ 1000
Relinquished By/Removed From ERC R. Fitts R. Fahlby 5.29.03	Received By/Stored In 1st Col Ex	Date/Time 1000
Relinquished By/Removed From FedEx 5/30/03 0945	Received By/Stored In JPerry 5/30/03 0945	Date/Time
Relinquished By/Removed From	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(7) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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)

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI-HANFORD		A030276

PART I - TO BE COMPLETED BY ORIGINATOR

Engineering Support | Field Analytical Support | Field Sampling Support

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing FED EX [X] Prepaid [ ] Collect

Shipped to: RECRA LAB NET
Company: 208 WELSH POOL ROAD
Address: LIONVILLE, PA 19341-1333
City: ATTN: ORLETTE JOHNSON
State Zip Code
Country: (610) 280-3012

Off-site Custodian

On-site Custodian HID

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	65 lbs	ERC 03-103 SAF F03-006 F.E# 7907-9459-8746	2 Total

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

[ ] Required for Project Work. List Project No. _____

[ ] Business Trip

[ ] Off-site Assignment

[ ] Shipment to Subcontractor. List Subcontract No _____

[ ] Other (Please specify)

ENVIRONMENTAL SAMPLES PACKAGED IN
POLYCOOLER WITH WET ICE AND DRY SORB

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING

RM Clearance for Public Release	RM Survey No	Date
NA	NA	

Location of and Contact for Property (name/phone no./bldg./area)
BOB FAHLBERG 376-6500/3728 BUILDING/300 AREA

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
5-29-03	XE 3010 PHMC	

Originated By	Date	Authorized By	Date
R. Fahlberg	5-29-03		
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
R. Fahlberg	5-29-03		

PART II - TO BE COMPLETED BY SHIPPING

5-29-03

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU Hanford

rchase Order/Project:

DATE: 5/30/03

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

aboratory SDG #: 0305L533

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 # (1)
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790794598746	☑ 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 # (2)
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-03-103 / 4°C

(1) No custody seals

(2) 002C Label says see item (5). This is not a requested item. No bottle was received for item (1), so this bottle was assigned to (1)

002B,C,E,G - Bottle size does not match client C (60 mL vs a 125 mL or vice-versa)

Laboratory Sample Custodian: JRemy 5/30/03 0945

Laboratory Project Manager:

Lionville Laboratory, Inc.
8015 ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124	001	S	03LE0671	05/20/03	06/03/03	06/03/03
B17124	001 MS	S	03LE0671	05/20/03	06/03/03	06/03/03
B17124	001 MSD	S	03LE0671	05/20/03	06/03/03	06/03/03
B17115	002	S	03LE0671	05/20/03	06/03/03	06/03/03
LAB QC:						
BLK	MB1	S	03LE0671	N/A	06/03/03	06/03/03
BLK	MB1 BS	S	03LE0671	N/A	06/03/03	06/03/03
BLK	MB1 BSD	S	03LE0671	N/A	06/03/03	06/03/03

7/1/03

JUL 2003
RECEIVED

Lionville Laboratory, Inc.
8015 ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116	001	S	03LE0671	05/27/03	06/03/03	06/03/03
B17123	002	S	03LE0671	05/27/03	06/03/03	06/03/03

LAB QC:

BLK	MB1	S	03LE0671	N/A	06/03/03	06/03/03
BLK	MB1 BS	S	03LE0671	N/A	06/03/03	06/03/03
BLK	MB1 BSD	S	03LE0671	N/A	06/03/03	06/03/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L520/533
SDG/SAF#: H2242/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-29,30-03

GC SCAN

The set of samples consisted of four (4) soil samples collected on 05-20,27-03.

The samples and their associated QC samples were prepped and analyzed on 06-03-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Ethylene Glycol.

The following is a summary of the QC results accompanying these 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. Surrogates are not currently employed in the methodology.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. All initial calibrations were within acceptance criteria.

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

7/10/03
Date

r:\group\data\gcsc\05L-520533.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 15 pages.

GLOSSARY OF GC SCAN 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.

GLOSSARY OF GC SCAN DATA

P	=	This flag is used for an GC SCAN 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 SCAN.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015 Report Date: 07/08/03 09:35

RFW Batch Number: 0305L520 Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17124	B17124	B17124	B17115	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	03LE0671-MB1	03LE0671-MB1
	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
Ethylene Glycol		37	71 %	92 %	23.5 U	25.0 U	86 %

	Cust ID:	BLK BSD
Sample Information	RFW#:	03LE0671-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg
Ethylene Glycol		104 %

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

7/8/03

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015 Report Date: 07/08/03 09:37

RFW Batch Number: **0305L533** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17116	B17123	BLK	BLK BS	BLK BSD
Sample Information	RFW#:	001	002	03LE0671-MB1	03LE0671-MB1	03LE0671-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Ethylene Glycol		25.5 U	24.5 U	25.0 U	86 %	104 %

7/8/03

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

03OSL520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: ~~TMA Hanford~~ F03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPCC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B	C	D	E	F	G
Refrigerator #		1	2	2	2	2	2	2
#/Type Container	Liquid	~~1AGL~~	~~1AGL~~	~~1AGL~~				
	Solid	1AGL	1AGL	1AGL	1AGL	1AGL	1AGL	1AGL
Volume	Liquid							
	Solid	60	125	60	60	125	60	60
Preservatives								

ANALYSES REQUESTED →

ORGANIC				INORG				
VOA	BNA	Pest/PCB	Herb	Metal	CN	Cr Hex	Fe Amme	NO_2/NO_3	Oil + Grease

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OGCSC 06244	06235X ODRO OGRO						MET ①		ICP 6	INORG ①	IN3N2	IOGGR
S - Soil	001	B17124	✓	✓	S	5/20/03	0945	1	1						1		1	1	1	1
SE - Sediment	002	B17115			⊥	⊥	0830	1							1		1		1	1
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 on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
IN H3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel~~ 06244H Add OGCSC
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ___ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1
Collector Johansen/Pope/Pfister	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 MDS-20-03 216-A-10 (C3247) ~~52.5-55.5~~ 52'-54'; 54'-56'	SAF No. F03-006	Air Quality ☐
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361 COA 117504ES10	Method of Shipment Federal Express	
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 9SL 5/24/03	Offsite Property No. A030240	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A MDS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		~~NA~~	52803
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5/20/03 1317	HO-(d-4d) REF	5/20/03 1317
HO-(d-4d) REF	5/20/03 1120	[illegible]	5/20/03 1120
[illegible]	5/20/03 1150	REF 1A 3728	5/20/03 1150
REF 1A 3728	52803 0800	SJGALE	52803 0800
SJGALE	52803 0800	FED EX	
FedEX	5/29/03 1000	JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99, Strontium-89,90 – Total Sr, Isotopic Thorium {Thorium-232}, Carbon-14, Iodine-~~

9SL 5/24/03

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	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 MDS-20-03 216-A-10 (C3247) ~~62.5-55 R~~ 52'-54'; 54'-56'	SAF No. F03-006	
Ice Chest No. ERC-02 010	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~FREFLINE SERVICES (Formerly TMA)~~ 9SL 5/20/03	Offsite Property No. RSR 107187		Bill of Lading/Air Bill No. N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ MDS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1		1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X			
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~5/28/03~~		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: TMJohansen/JMPfister	5/20/03 1317	Received By/Stored In: HO-64-D7 REF	5/20/03 1317
Relinquished By/Removed From: HO-64-D7 REF	5/20/03 1120	Received By/Stored In: TMJohansen/JMPfister	5/20/03 1120
Relinquished By/Removed From: TMJohansen/JMPfister	5/20/03 1150	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: SJGALE	52803 0800
Relinquished By/Removed From: SJGALE	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed EX	5-29-03 1000	Received By/Stored In:	

SPECIAL INSTRUCTIONS 9SL 5/20/03
~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-153, Europium-154, Europium-155}; Gamma Spec - Add-on {Cesium-134, Radium-226, Radium-228, Tin-126}; Total Uranium, Americium-241; Isotopic Plutonium; Isotopic Uranium~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

9SL 5/20/03

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)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU Hanford

urchase Order/Project:

DATE: 5/29/03

AF# / SOW# / Release #: F03-000

aboratory SDG #: 03051520

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? See below	☑ 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 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-03-101 / Airbill 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: JRemy 5/29/03 1000

Laboratory Project Manager:

Lionville Laboratory Use Only
0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: OJ
QC: SPEX Del: STD TAT: 30 days
Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125/60			60/60	60		60/125		60	125/60	60			
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb		Oil & Grease		INORG: Metal	CN		Cr 6	TC Cations	NO2/NO3			
	Lionville Laboratory Use Only	0624X	0625X 0080 0680			OGCSC	IOGGR	MET①			ICR6	INORG①	IN3N/2			

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X 0080 0680			OGCSC	IOGGR		MET①		ICR6	INORG①	IN3N/2			
S - Soil	001	B17116			S	5/27/03	1030	1	1			1	1		1		1	1	1			
SE - Sediment	002	B17123			⊥	⊥	⊥	1	1			1	1		1		1	1	1			
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

MET①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:

002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).
2.
002B,C,E,G ~~Bottle size does not match size~~ indicated on COC.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # See below
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. 4 °C

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

Relinquished by	Received by	Date	Time
FedEx	J Perry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Reesa WD 5-27-03	Offsite Property No.: 030 226	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ MJS 5-27-03

N/A

Radiological Tie To: ~~B17116~~ MJS 5-27-03 (B17116; B17123)

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X	MJS 5-27-03		
~~B12 B17122~~ MJS 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X	MJS 5-27-03		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	MJS 5-27-03	5/27/03 1415	ERC R. Fuller	5-27-03 1415
Relinquished By/Removed From	R. Fuller	5-27-03 1415	IB 3728	5-27-03 1415
Relinquished By/Removed From	R. Fuller IB	5-29-03 1050	R. Fuller	5-29-03 1000
Relinquished By/Removed From	ERC R. Fuller	5-29-03 1050	Fed Ex	
Relinquished By/Removed From	Fed Ex	5/30/03 0945	JPerry	5/30/03 0945
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129~~ Nickel-63; Neptunium-237

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

JMP 5-27-03

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	F03-006-114	Page 2 of 2
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) ~~318.5-321 ft~~ TMS 5-27-03 62.5-65'	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03 102	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Hecra	Offsite Property No.: 17030-276	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Radioactive TILTO: See Below

Special Handling and/or Storage

N/A

Preservation	None	Cool 4C									
Type of Container	aG	aG									
No. of Container(s)	TMS 5-27-03	1									
Volume	mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See special instruction (7)		TILTO:							

Sample No.	Matrix *	Sample Date	Sample Time										
B17123	SOIL	5-27-03	1030		X		B7133						
B17126	Soil	5-27-03	1030		X		B7133						
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~		X		B7134						
Re 5-29-03													

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: [illegible]	5-27-03 1445	Received By/Stored In: ERC [illegible]	1445 5-27-03
Relinquished By/Removed From: [illegible]	1400 5-27-03	Received By/Stored In: [illegible]	1415 5-27-03
Relinquished By/Removed From: IB 3728	5-29-03 1000	Received By/Stored In: [illegible]	1000 5-29-03
Relinquished By/Removed From: ERC [illegible]	5-29-03 1000	Received By/Stored In: 1st Col Ex	
Relinquished By/Removed From: FedEx	5/30/03 0945	Received By/Stored In: JPerry	5/30/03 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(7) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 0305L533

NOTE: 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 # (1)
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790194598746	☑ 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 # (2)
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-03-103 / 4°C

(1) No custody seals

(2) 002C Label says see item (5). This is not a requested item. No bottle was received to item (1), so this bottle was assigned to (1)

002B,C,E,G - Bottle size doesnt match client (60 mL to a 125 mL or vice-versa)

Laboratory Sample Custodian: JRemy 5/30/03 0945

Laboratory Project Manager:

Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124	001	S	03LE0655	05/20/03	05/30/03	06/02/03
B17124	001 MS	S	03LE0655	05/20/03	05/30/03	06/02/03
B17124	001 MSD	S	03LE0655	05/20/03	05/30/03	06/02/03
B17115	002	S	03LE0655	05/20/03	05/30/03	06/02/03
LAB QC:						
BLK	MB1	S	03LE0655	N/A	05/30/03	06/02/03
BLK	MB1 BS	S	03LE0655	N/A	05/30/03	06/02/03
BLK	MB1 BSD	S	03LE0655	N/A	05/30/03	06/02/03

JUL 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L520
SDG/SAF#: H2242/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-29-03

GC SCAN

The set of samples consisted of two (2) soil samples collected on 05-20-03.

The samples and their associated QC samples were prepped on 05-30-03 and analyzed on 06-02-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Methanol, Ethyl Ether, and 1-Butanol.

The following is a summary of the QC results accompanying these 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. Surrogates are not currently employed in the methodology.

5. One (1) of six (6) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. All matrix spike recoveries were within acceptance criteria.

7. All initial calibrations were within acceptance criteria.

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

6/20/03
Date

r:\group\data\gcsc\05L-520.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 10 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0366218

Initiator: John Lach.
Date: 6/2/03
Client: JNU

Batch: 0305L520
Samples: spikes.
Method: SW846/MCAWW/CLP/

Parameter: O GCSC
Matrix: Soil
Prep Batch: 03LE065S.

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)

Blank ~~matrix~~ spike for ethyl ether Decreased @ 45% Limit 50%.

2. Known or Probable Causes(s)

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:

Matrix. Blank spike Duplicate. and MS & MSD in control. No hits in samples.

4. Project Manager Instructions...signature/date: 6/23/03

__ 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: 6/23/03

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)	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

GLOSSARY OF GC SCAN 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.

GLOSSARY OF GC SCAN DATA

P = This flag is used for an GC SCAN 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 SCAN.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GC SCAN

Report Date: 06/21/03 10:59

RFW Batch Number: **0305L520** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17124	B17124	B17124	B17115	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	03LE0655-MB1	03LE0655-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Methanol		28 U	93 %	99 %	28 U	25 U	114 %
Ethyl Ether		28 U	94 %	98 %	28 U	25 U	45 * %
1-Butanol		28 U	94 %	95 %	28 U	25 U	94 %

	Cust ID:	BLK BSD
Sample Information	RFW#:	03LE0655-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	mg/kg
Methanol		134 %
Ethyl Ether		64 %
1-Butanol		98 %

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

0305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 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: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B						C		D	E	F	G		
Refrigerator #		1	2						2		2	2	2	2		
#/Type Container	Liquid	~~1AGL~~	~~1AGL~~						~~1AG~~							
	Solid	1AGL	1AGL						1AGL		1AGL	1AGL	1AGL	1AGL		
Volume	Liquid															
	Solid	60	125						60		60	125	60	60		
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb					INORG: Metal	CN	Cr Hex	IC anions	NO2/NO3	oil + grease		
Lionville Laboratory Use Only	0624+0624H	0625x 0D20 0G20							MET ①		ICP 6	INORG ①	IN3N2	IOGGR		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OGCSC	0625x	MET ①	ICP 6	INORG ①	IN3N2	IOGGR
S - Soil	001	B17124	✓	✓	S	5/20/03	0945	1	1	1	1	1	1	1
SE - Sediment	002	B17115			⊥	⊥	0830	1		1	1		1	1
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 on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
IN H3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel 0624H~~ Add OGCSC
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ___ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 ~~MOS-20-03~~ 216-A-10 (C3247) ~~62.5-55.8~~ 52'-54'; 54'-56'	SAF No. F03-006	
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/20/03	Offsite Property No. A030240		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ ~~MOS-23-03~~ Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		~~N/A~~	52803
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Johansen/Pope/Pfister	5/20/03 1317	Received By/Stored In: HO-64-27 REF	5/20/03 1317
Relinquished By/Removed From: HO-64-27 REF	5/20/03 1120	Received By/Stored In: Johansen/Pope/Pfister	5/20/03 1120
Relinquished By/Removed From: Johansen/Pope/Pfister	5/20/03 1150	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: SJ Gale	52803 0800
Relinquished By/Removed From: SJ Gale	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: FedEx	5/29/03 1000	Received By/Stored In: JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium {Thorium-232}; Carbon-14; Iodine-~~

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	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	**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** MDS-20-03 216-A-10 (C3247) ~~52.5-55 ft~~ 52'-54'; 54'-56'	**SAF No.** F03-006	**Air Quality** ☐
Ice Chest No. ERC 02 010	**Field Logbook No.** HNF-N-3361 / **COA** 117504ES10	**Method of Shipment** Federal Express	
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/21/03	**Offsite Property No.** PSR 107187	**Bill of Lading/Air Bill No.** N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ MDS-23-03 Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1		1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X			
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~			

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Johansen/Pope/Pfister	5/20/03 1317	HO-64-27 REF	5/20/03 1317
HO-64-27 REF	5/20/03 1120	Johansen/Pope/Pfister	5/20/03 1120
Johansen/Pope/Pfister	5/20/03 1150	REF 1A 3728	5/20/03 1150
REF 1A 3728	52803 0800	S GALE	52803 0800
S GALE	52803 0800	FED EX	
FED EX	5-29-03 1000		

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

5/20/03 5/24/03

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)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

ıIENT: TNU Hanford

rchase Order/Project:

DATE: 5/09/03

ıF# / SOW# / Release #: F03-000

ıboratory SDG #: 03054520

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? See below	☑ 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 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-03-101 / TRK# 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: J Remy 5/09/03 1000

Laboratory Project Manager:

10

Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116	001	S	03LE0715	05/27/03	06/11/03	06/11/03
B17123	002	S	03LE0715	05/27/03	06/11/03	06/11/03
LAB QC:						
BLK	MB1	S	03LE0715	N/A	06/11/03	06/11/03
BLK	MB1 BS	S	03LE0715	N/A	06/11/03	06/11/03

7/10/03

JUL 2003
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L533
SDG/SAF#: H2242/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-30-03

GC SCAN

The set of samples consisted of two (2) soil samples collected on 05-27-03.

The samples and their associated QC samples were prepped and analyzed on 06-11-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Methanol, Ethyl Ether, and 1-Butanol.

The following is a summary of the QC results accompanying these 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. Surrogates are not currently employed in the methodology.

5. All blank spike recoveries were within acceptance criteria.

6. Matrix spike analyses are associated with Lionville batch# 0305L520.

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. 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

7/10/03
Date

r:\group\data\gcsc\05L-533.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 9 pages.

GLOSSARY OF GC SCAN 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.

GLOSSARY OF GC SCAN DATA

P	=	This flag is used for an GC SCAN 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 SCAN.

Lionville Laboratory, Inc.

GC SCAN

Report Date: 07/09/03 17:14

RFW Batch Number: **0305L533** Client: **TNUHANFORD F03-006 H2242** Work Order: 11343606001 Page: 1

	Cust ID:	B17116	B17123	BLK	BLK BS
Sample Information	RFW#:	001	002	03LE0715-MB1	03LE0715-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg

Methanol	26	U		29	U		25	U		96	%						
Ethyl Ether	26	U		29	U		25	U		54	%						
1-Butanol	26	U		29	U		25	U		91	%						

7/9/03

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
0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INL Hanford F03-006
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: QJ
QC: SPEC Del: STD TAT: 30 days
Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125/60			60/125	60		60/125		60	125/60	60			
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	Dioxin/Furan	Oil Gravimetric		INORG: Metal	CN	Cr6	TC Cyanide	NO2/NO3			
Lionville Laboratory Use Only		0624X	0625X 0080 0GRD			OGCSC	IOGGR		MET①		ICR6	INORG①	IN3N2			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X 0080 0GRD			OGCSC	IOGGR		MET①		ICR6	INORG①	IN3N2			
S - Soil	001	B17116			S	5/27/03	1030	1	1			1	1		1		1	1	1			
SE - Sediment	002	B17123			⊥	⊥	⊥	1	1			1	1		1		1	1	1			
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

MET①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:

002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).
2.
002B,C,E,G ~~Bottle size does not match size~~ indicated on COC.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # See below
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. 4 °C

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

Relinquished by	Received by	Date	Time
FedEX	J Perry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Reese MD 5-27-03	Offsite Property No.: 030 226	Bill of Lading/Air Bill No.: SEFOSR	

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ MD 5-27-03

N/A

Radiological Tie To: ~~B17116~~ MD 5-27-03 (B17116; B17123)

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X	MD 5-27-03		
~~B12 B17122~~ MD 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X	MD 5-27-03		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: FH MD 5-27-03	5/27/03 1415	Received By/Stored In: ERC R.F. Cole R.F. Cole	5-27-03 1415
Relinquished By/Removed From: R.F. Cole R.F. Cole	5-27-03 1415	Received By/Stored In: IB 3728	5-27-03 1415
Relinquished By/Removed From: ~~R.F. Cole R.F. Cole~~ IB 5-29-03	10 50	Received By/Stored In: R.F. Cole R.F. Cole	5-29-03 1000
Relinquished By/Removed From: ERC R.F. Cole R.F. Cole	10 50 5-29-03	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	5/30/03 0945	Received By/Stored In: JPony	5/30/03 0945
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
~~(6) Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237~~

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

JMP 5-27-03

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	F03-006-114	Page 2 of 2

Collector: Johansen/Pope/Pfister	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: ~~TMD 5-27-03~~ 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03 102	Field Logbook No.: HNF-N-3361 — COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~TMD 5-27-03~~ ~~EBERLINE SERVICES (Formerly TMA)~~ Beccra	Offsite Property No.: 17030-276	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS
~~N/A~~ Radioactive Tile TO: See Below

Special Handling and/or Storage
N/A

Preservation	None	0014C									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60 mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See Special Instruction (T)									

Sample No.	Matrix *	Sample Date	Sample Time				Tile TO:					
B17123	SOIL	5-27-03	1030		X		B7133					
B17120	Soil	5-27-03	1030		X		B7133					
~~B7122~~	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B7134~~					
Re 5-29-03												

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: [illegible]	5-27-03 1445	Received By/Stored In: ERC [illegible]	1445 5-27-03
Relinquished By/Removed From: [illegible]	1410 5-27-03	Received By/Stored In: [illegible]	1415 5-27-03
Relinquished By/Removed From: IB 3728	~~1000~~ 5-29-03	Received By/Stored In: [illegible]	1000 5-29-03
Relinquished By/Removed From: ERC [illegible]	1000 5-29-03	Received By/Stored In: 1st Col Ex	
Relinquished By/Removed From: FedEx	5/30/03 0945	Received By/Stored In: JPerry	5/30/03 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.
(T) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 0305L533

NOTE: 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 # (1)
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790794598746	☑ 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 # (2)
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-03-103 / 4°C

(1) No custody seals

(2) 002C Label says see item (5). This is not a requested item. No bottle was recieved for item (1), so this bottle was assigned to (1).
002B,C,E,G - Bottle size doesnt match client c
(60mL to a 125 mL or vice-versa)

Laboratory Sample Custodian: JKerry 5/30/03 0945

Laboratory Project Manager:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

JUL 2003
RECEIVED

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124						
SILVER, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
SILVER, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
SILVER, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
ARSENIC, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
ARSENIC, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
ARSENIC, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
BORON, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
BORON, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
BORON, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
BARIUM, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
BARIUM, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
BARIUM, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
BISMUTH, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
BISMUTH, TOTAL REP	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
BISMUTH, TOTAL SPIKE	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
CADMIUM, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
CADMIUM, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
CADMIUM, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
CHROMIUM, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
CHROMIUM, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
CHROMIUM, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
COPPER, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
COPPER, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
COPPER, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
MERCURY, TOTAL	001	S	03C0143	05/20/03	06/12/03	06/12/03
NICKEL, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
NICKEL, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
NICKEL, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
LEAD, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
LEAD, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
LEAD, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
ANTIMONY, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03

JUL 2003
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
ANTIMONY, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
SELENIUM, TOTAL	001	S	03L0324	05/20/03	06/09/03	06/13/03
SELENIUM, TOTAL	001 REP	S	03L0324	05/20/03	06/09/03	06/13/03
SELENIUM, TOTAL	001 MS	S	03L0324	05/20/03	06/09/03	06/13/03
B17115						
SILVER, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
ARSENIC, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
BORON, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
BARIUM, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
BISMUTH, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
CADMIUM, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
CHROMIUM, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
COPPER, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
MERCURY, TOTAL	002	S	03C0143	05/20/03	06/12/03	06/12/03
NICKEL, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
LEAD, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
ANTIMONY, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03
SELENIUM, TOTAL	002	S	03L0324	05/20/03	06/09/03	06/13/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SILVER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BORON LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BORON, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BARIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BARIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BISMUTH, LCS	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BISMUTH, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
COPPER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
COPPER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
MERCURY LABORATORY	LC1 BS	S	03C0143	N/A	06/12/03	06/12/03
MERCURY, TOTAL	MB1	S	03C0143	N/A	06/12/03	06/12/03
NICKEL LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
NICKEL, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
LEAD LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
LEAD, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116						
SILVER, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
SILVER, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
SILVER, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
ARSENIC, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
ARSENIC, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
ARSENIC, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
BORON, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
BORON, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
BORON, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
BARIUM, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
BARIUM, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
BARIUM, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
BISMUTH, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
BISMUTH, TOTAL REP	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
BISMUTH, TOTAL SPIKE	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
CADMIUM, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
CADMIUM, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
CADMIUM, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
CHROMIUM, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
CHROMIUM, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
CHROMIUM, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
COPPER, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
COPPER, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
COPPER, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
MERCURY, TOTAL	001	S	03C0143	05/27/03	06/12/03	06/12/03
MERCURY, TOTAL	001 REP	S	03C0143	05/27/03	06/12/03	06/12/03
MERCURY, TOTAL	001 MS	S	03C0145	05/27/03	06/13/03	06/13/03
NICKEL, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
NICKEL, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
NICKEL, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
LEAD, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
LEAD, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
ANTIMONY, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
ANTIMONY, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
ANTIMONY, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
SELENIUM, TOTAL	001	S	03L0324	05/27/03	06/09/03	06/13/03
SELENIUM, TOTAL	001 REP	S	03L0324	05/27/03	06/09/03	06/13/03
SELENIUM, TOTAL	001 MS	S	03L0324	05/27/03	06/09/03	06/13/03
B17123						
SILVER, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
ARSENIC, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
BORON, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
BARIUM, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
BERYLLIUM, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
BISMUTH, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
CADMIUM, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
CHROMIUM, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
COPPER, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
MERCURY, TOTAL	002	S	03C0143	05/27/03	06/12/03	06/12/03
NICKEL, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
LEAD, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
ANTIMONY, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03
SELENIUM, TOTAL	002	S	03L0324	05/27/03	06/09/03	06/13/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SILVER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BORON LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BORON, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BARIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BARIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BISMUTH, LCS	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BISMUTH, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
COPPER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
COPPER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
MERCURY LABORATORY	LC1 BS	S	03C0143	N/A	06/12/03	06/12/03
MERCURY, TOTAL	MB1	S	03C0143	N/A	06/12/03	06/12/03
MERCURY LABORATORY	LC1 BS	S	03C0145	N/A	06/13/03	06/13/03
MERCURY, TOTAL	MB1	S	03C0145	N/A	06/13/03	06/13/03
NICKEL LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
NICKEL, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
LEAD LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
LEAD, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006
LVL#: 0305L520\0305L533
SDG/SAF#: H2242/F03-006

W.O.#: 11343-606-001-9999-00
Dates Received: 05-29\05-30-03

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

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

3. All analyses were performed within the required holding times.

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

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 26 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B17124	Antimony	100	115.3
B17116	Antimony	100	110.1

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. 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

06-23-03
Date

jjw/m05-520\533

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 03052520\03052533

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A X 3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	X 6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X 6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 6010B		__200.7				__99
Beryllium	X 6010B		__200.7				__99
Bismuth	X 6010B [1]		__200.7 [1]			__1620	__99
Boron	X 6010B		__200.7				__99
Cadmium	X 6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X 6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	X 6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X 6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	X 7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X 6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X 6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X 6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2 __200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

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
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242

LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17124	Silver, Total	0.13 u	MG/KG	0.13	1.0
		Arsenic, Total	2.6	MG/KG	0.37	1.0
		Boron, Total	0.71	MG/KG	0.21	1.0
		Barium, Total	3.5	MG/KG	0.02	1.0
		Beryllium, Total	0.03	MG/KG	0.01	1.0
		Bismuth, Total	0.57 u	MG/KG	0.57	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	1.7	MG/KG	0.11	1.0
		Copper, Total	1.3	MG/KG	0.07	1.0
		Mercury, Total	0.1	MG/KG	0.02	1.0
		Nickel, Total	0.99	MG/KG	0.14	1.0
		Lead, Total	0.69	MG/KG	0.26	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
-002	B17115	Silver, Total	0.13 u	MG/KG	0.13	1.0
		Arsenic, Total	3.1	MG/KG	0.36	1.0
		Boron, Total	1.0	MG/KG	0.20	1.0
		Barium, Total	5.6	MG/KG	0.02	1.0
		Beryllium, Total	0.05	MG/KG	0.01	1.0
		Bismuth, Total	0.55 u	MG/KG	0.55	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	2.7	MG/KG	0.11	1.0
		Copper, Total	3.1	MG/KG	0.06	1.0
		Mercury, Total	0.14	MG/KG	0.02	1.0
		Nickel, Total	1.9	MG/KG	0.14	1.0
		Lead, Total	1.1	MG/KG	0.25	1.0
		Antimony, Total	0.30	MG/KG	0.24	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17116	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	4.2	MG/KG	0.34	1.0
		Boron, Total	0.69	MG/KG	0.20	1.0
		Barium, Total	31.8	MG/KG	0.02	1.0
		Beryllium, Total	0.23	MG/KG	0.01	1.0
		Bismuth, Total	0.52 u	MG/KG	0.52	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	9.9	MG/KG	0.10	1.0
		Copper, Total	11.2	MG/KG	0.06	1.0
		Mercury, Total	0.74	MG/KG	0.01	1.0
		Nickel, Total	11.4	MG/KG	0.13	1.0
		Lead, Total	4.3	MG/KG	0.24	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0
-002	B17123	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	3.2	MG/KG	0.34	1.0
		Boron, Total	0.73	MG/KG	0.19	1.0
		Barium, Total	35.5	MG/KG	0.02	1.0
		Beryllium, Total	0.17	MG/KG	0.01	1.0
		Bismuth, Total	0.52 u	MG/KG	0.52	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	10.1	MG/KG	0.10	1.0
		Copper, Total	9.1	MG/KG	0.06	1.0
		Mercury, Total	1.2	MG/KG	0.02	1.0
		Nickel, Total	9.3	MG/KG	0.13	1.0
		Lead, Total	4.0	MG/KG	0.23	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/18/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520 \ 0305L533

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0324-MB1	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Boron, Total	0.19 u	MG/KG	0.19	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.12	MG/KG	0.10	1.0
		Copper, Total	0.08	MG/KG	0.06	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.24	MG/KG	0.23	1.0
		Antimony, Total	0.27	MG/KG	0.22	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
BLANK1	03C0143-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B17124	Silver, Total	5.0	0.13u	5.5	90.9	1.0
		Arsenic, Total	185	2.6	218	83.7	1.0
		Boron, Total	94.3	0.71	109	85.8	1.0
		Barium, Total	203	3.5	218	91.2	1.0
		Beryllium, Total	4.7	0.03	5.5	85.0	1.0
		Bismuth, Total	498	0.57u	546	91.2	1.0
		Cadmium, Total	4.8	0.04u	5.5	87.3	1.0
		Chromium, Total	22.1	1.7	21.8	93.6	1.0
		Copper, Total	26.7	1.3	27.3	93.0	1.0
		Nickel, Total	50.1	0.99	54.5	90.1	1.0
		Lead, Total	49.2	0.69	54.5	89.0	1.0
		Antimony, Total	37.6	0.24u	54.5	69.0	1.0
		Selenium, Total	180	0.47u	218	82.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242

LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B17116	Silver, Total	4.6	0.12u	5.1	90.2	1.0
		Arsenic, Total	187	4.2	204	89.7	1.0
		Boron, Total	90.0	0.69	102	87.7	1.0
		Barium, Total	217	31.8	204	90.9	1.0
		Beryllium, Total	4.7	0.23	5.1	87.7	1.0
		Bismuth, Total	470	0.52u	509	92.2	1.0
		Cadmium, Total	4.6	0.04u	5.1	90.2	1.0
		Chromium, Total	27.2	9.9	20.4	84.8	1.0
		Copper, Total	35.3	11.2	25.5	94.5	1.0
		Mercury, Total	1.4	0.74	0.18	352.3*	1.0
		Nickel, Total	56.1	11.4	50.9	87.8	1.0
		Lead, Total	50.5	4.3	50.9	90.8	1.0
		Antimony, Total	30.9	0.23u	50.9	60.7	1.0
		Selenium, Total	178	0.43u	204	87.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17124	Silver, Total	0.13u	0.13u	NC	1.0
		Arsenic, Total	2.6	2.5	3.9	1.0
		Boron, Total	0.71	0.66	7.2	1.0
		Barium, Total	3.5	3.2	9.0	1.0
		Beryllium, Total	0.03	0.02	54.4	1.0
		Bismuth, Total	0.57u	0.56u	NC	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Chromium, Total	1.7	1.8	5.7	1.0
		Copper, Total	1.3	1.7	26.7	1.0
		Nickel, Total	0.99	1.2	18.8	1.0
		Lead, Total	0.69	0.60	13.2	1.0
		Antimony, Total	0.24u	0.24u	NC	1.0
		Selenium, Total	0.47u	0.46u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242

LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17116	Silver, Total	0.12u	0.12u	NC	1.0
		Arsenic, Total	4.2	3.7	12.7	1.0
		Boron, Total	0.69	0.68	1.4	1.0
		Barium, Total	31.8	30.6	3.8	1.0
		Beryllium, Total	0.23	0.22	3.8	1.0
		Bismuth, Total	0.52u	0.53u	NC	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Chromium, Total	9.9	8.1	20.0	1.0
		Copper, Total	11.2	12.6	11.8	1.0
		Mercury, Total	0.74	0.70	5.1	1.0
		Nickel, Total	11.4	9.9	14.1	1.0
		Lead, Total	4.3	4.0	7.2	1.0
		Antimony, Total	0.23u	0.52	~~NC~~ 200	1.0
		Selenium, Total	0.43u	0.44u	NC MW 6/18/03	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/18/03

CLIENT: TNUHANFORD F03-006 H2242

LVL LOT #: 0305L520 \ 03052533

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	03L0324-LC1	Silver, LCS	50.8	50.0	MG/KG	101.6
		Arsenic, LCS	929	1000	MG/KG	92.9
		Boron, LCS	460	500	MG/KG	91.9
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.8	25.0	MG/KG	99.2
		Bismuth, LCS	472	500	MG/KG	94.5
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Chromium, LCS	51.8	50.0	MG/KG	103.6
		Copper, LCS	126	125	MG/KG	101.1
		Nickel, LCS	198	200	MG/KG	99.0
		Lead, LCS	242	250	MG/KG	96.6
		Antimony, LCS	287	300	MG/KG	95.6
		Selenium, LCS	860	1000	MG/KG	86.0
LCS1	03C0143-LC1	Mercury, LCS	6.4	6.2	MG/KG	103.5

Lionville Laboratory Use Only
0305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI 5

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: ~~THE Hanford~~ F03-006

Est. Final Proj. Sampling Date:

Project #: 113443-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B	C	D	E	F	G
Refrigerator #		1	2	2	2	2	2	2
#/Type Container	Liquid	~~1AGL~~	~~1AGL~~	~~1AGL~~				
	Solid	1AGL	1AGL	1AGL	1AGL	1AGL	1AGL	1AGL
Volume	Liquid							
	Solid	60	125	60	60	125	60	60
Preservatives								
ANALYSES REQUESTED →	ORGANIC: VOA	~~0624+1~~ 0624H						
	ORGANIC: BNA		0625x					
	ORGANIC: Pest/PCB		0PRO					
	ORGANIC: Herb		0GRO					
	INORG: Metal			MET ①				
	INORG: CN							
	Cr Hex				ICR6			
	Ic anions					INORG ①		
	NO2/NO3						IN3N2	
	oil + grease							IOGGR

Lionville Laboratory Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SG - 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	0GCSC 0624+1 0624H	0625x 0PRO 0GRO	MET ①	ICR6	INORG ①	IN3N2	IOGGR
001	B17124	✓	✓	S	5/20/03	0945	1	1	1	1	1	1	1
002	B17115			⊥	⊥	0830	1	✓	1	1	✓	1	1

Special Instructions: SAF # F03-006
Run Matrix QC on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO3, NO2, PO4, SO4
INH3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel 0624H~~ Add OGCSC
6-2-03 2. Add to -002 same analyses as in -001
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 792256788451
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. 1.7 °C

Lionville Laboratory Use Only
0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford F03-006
Est. Final Proj. Sampling Date:
Project #: 1123-606.001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: QJ
QC: SPL Del: STD TAT: 30 days

Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125 60			60 125	60		60 125		60	125 60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb	Oil & Grease			INORG: Metal	CN	Cr 6	TC Cyanide	NO2/NO3			

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	0624H	0625X ODBA 0680			OGCSC	IOGGR	MET ①		ICR6	INORG ①	IN3N2			
001	B17116			S	5/27/03	1030	1	1			1	1	1		1	1	1			
002	B17123			⊥	⊥	⊥	1	1			1	1	1		1	1	1			

Special Instructions: SAF # F03-006
Run Matrix QC

MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ①: IC: Cl, F, NO_3 NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:
002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).
2.
002B,C,E,~~G~~ ~~Bottle size does not match size~~ indicated on COC.
4.
6-2-03 5. Change 0624X to 0624H
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # see below
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. 4 °C

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

Relinquished by	Received by	Date	Time
FedEX	J Perry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

TRK# 7907 9459 8746

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 MJS-20-03 216-A-10 (C3247) ~~62.5-55-R~~ 52'-54'; 54'-56'	SAF No. F03-006	
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/20/03	Offsite Property No. A030240		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A MJS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~N/A~~	52803
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Johansen/Johansen Date/Time 5/20/03 1317	Received By/Stored In: HO-64-427 Ref Date/Time 5/20/03 1317
Relinquished By/Removed From: HO-64-427 Ref 5/20/03 1120	Received By/Stored In: Johansen/Johansen Date/Time 5/20/03 1120
Relinquished By/Removed From: Johansen/Johansen Date/Time 5/20/03 1150	Received By/Stored In: REF 1A 3728 Date/Time 5/20/03 1150
Relinquished By/Removed From: REF 1A 3728 52803 0800	Received By/Stored In: S Gale Date/Time 52803 0800
Relinquished By/Removed From: S Gale 52803 0800	Received By/Stored In: FED EX Date/Time
Relinquished By/Removed From: FedEx Date/Time 5/29/03 1000	Received By/Stored In: JPerry Date/Time 5/29/03 1000

SPECIAL INSTRUCTIONS

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)
(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

5/20/03

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

5/20/03

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	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location MDS-20-03 216-A-10 (C3247) ~~52.5-55 ft~~ 52'-54'; 54'-56'		SAF No. F03-006
Ice Chest No. ERC 02 010	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To REZRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/20/03	Offsite Property No. RSR 107187		Bill of Lading/Air Bill No. N/A

Price Code 8N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A MDS-23-03 Radioactive TRU TD: B17131, B17132

Special Handling and/or Storage

N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1		1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time									
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X		
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~5/28/03~~	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Johansen/Johansen	5/20/03 1317	Received By/Stored In: HO-64-27 REF	5/20/03 1317
Relinquished By/Removed From: HO-64-27 REF	5/20/03 1120	Received By/Stored In: Johansen/Johansen	5/20/03 1120
Relinquished By/Removed From: Johansen/Johansen	5/20/03 1150	Received By/Stored In: REF 1A 3728	5/20/03 1150
Relinquished By/Removed From: REF 1A 3728	52803 0800	Received By/Stored In: SJGALE	52803 0800
Relinquished By/Removed From: SJGALE	52803 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	5-29-03 1000	Received By/Stored In:	

SPECIAL INSTRUCTIONS

~~** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

5/20/03

Matrix *

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

5/20/03

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1
Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361; COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ Reera MJS 5-27-03	Offsite Property No.: 030 226	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ MJS 5-27-03
N/A
Radiological Tie To: ~~B17116~~ MJS 5-27-03 (B17116; B17123)

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X		MJS 5-27-03	
~~B12 B17122~~ 5-27-03	Soil	5-27-03	1110	X	X	X	X	X	X	X		MJS 5-27-03	

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MJ Johansen	5/27/03 1415	ERC R.E. Kuhn	5-27-03 1415
R.E. Kuhn	1415 5-27-03	IB 3728	5-27-03 1417
R.E. Kuhn	IB 5-27-03 1050	R.E. Kuhn	5-27-03 1050
R.E. Kuhn	ERC 1050	Fed Ex	
Fed Ex	5/30/03 0945	JPeny	5/30/03 0945

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.
(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
~~(6) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129~~ Nickel-63; Neptunium-237
MJS 5-27-03

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

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-114	Page 2 of 2

Collector Johansen/Pope/Pfister	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 ~~TMS 5-27-03~~ 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'	SAF No. F03-006	
Ice Chest No. ERC 03 102	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To ~~TMS 5-27-03~~ ~~EBERLINE SERVICES (Formerly TMA)~~ Hecra	Offsite Property No. 17030-276		Bill of Lading/Air Bill No. SEE OSR

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Radioactive TicTo: See Below

Special Handling and/or Storage

N/A

Preservation	None	1004C									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See Special Instructions (7)		TicTo:							

Sample No.	Matrix *	Sample Date	Sample Time									
B17123	SOIL	5-27-03	1030		X		B7133					
B17126	Soil	5-27-03	1030		X		B7133					
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B7134~~					
5-29-03												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5-27-03 1415	ERC [illegible]	1415
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5-27-03 1415	[illegible]	5-27-03 1415
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
1B 7728	5-29-03 ~~10:00~~	[illegible]	5-29-03 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
ERC [illegible]	5-29-03 1000	1st Col Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	5/30/03 0945	JPerry	5/30/03 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(7) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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

rchase Order/Project:

DATE: 5/29/03

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

aboratory SDG #: 03054520

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? See below	☑ 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 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-03-101 / TAK# 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: J Perry 5/29/03 1000

Laboratory Project Manager:

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 0305L533

NOTE: 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 # (1)
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790794598746	☑ 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 # (2)
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-03-103 / 4°C

(1) No custody seals

(2) 002C Label says see item (5). This is not a requested item. No bottle was received for item (1), so this bottle was assigned to (1)

002B,C,E,G - Bottle size does not match client (60 mL is a 125 mL or vice-versa)

Laboratory Sample Custodian: JKerry 5/30/03 0945

Laboratory Project Manager:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17124						
% SOLIDS	001	S	03L%S075	05/20/03	05/30/03	05/31/03
% SOLIDS	001 REP	S	03L%S075	05/20/03	05/30/03	05/31/03
CHLORIDE BY IC	001	S	03LICB38	05/20/03	06/12/03	06/12/03
CHLORIDE BY IC	001 REP	S	03LICB38	05/20/03	06/12/03	06/12/03
CHLORIDE BY IC	001 MS	S	03LICB38	05/20/03	06/12/03	06/12/03
FLUORIDE BY IC	001	S	03LICB38	05/20/03	06/12/03	06/12/03
FLUORIDE BY IC	001 REP	S	03LICB38	05/20/03	06/12/03	06/12/03
FLUORIDE BY IC	001 MS	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRITE BY IC	001	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRITE BY IC	001 REP	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRITE BY IC	001 MS	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRATE BY IC	001	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRATE BY IC	001 REP	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRATE BY IC	001 MS	S	03LICB38	05/20/03	06/12/03	06/12/03
TOTAL CYANIDE	001	S	03LCA51	05/20/03	06/03/03	06/03/03
TOTAL CYANIDE	001 REP	S	03LCA51	05/20/03	06/03/03	06/03/03
TOTAL CYANIDE	001 MS	S	03LCA51	05/20/03	06/03/03	06/03/03
PHOSPHATE BY IC	001	S	03LICB38	05/20/03	06/12/03	06/12/03
PHOSPHATE BY IC	001 REP	S	03LICB38	05/20/03	06/12/03	06/12/03
PHOSPHATE BY IC	001 MS	S	03LICB38	05/20/03	06/12/03	06/12/03
CHROMIUM VI	001	S	03LVI047	05/20/03	06/09/03	06/09/03
CHROMIUM VI	001 REP	S	03LVI047	05/20/03	06/09/03	06/09/03
CHROMIUM VI	001 MS	S	03LVI047	05/20/03	06/09/03	06/09/03
CHROMIUM VI	001 MSD	S	03LVI047	05/20/03	06/09/03	06/09/03
SULFATE BY IC	001	S	03LICB38	05/20/03	06/12/03	06/12/03
SULFATE BY IC	001 REP	S	03LICB38	05/20/03	06/12/03	06/12/03
SULFATE BY IC	001 MS	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRATE NITRITE	001	S	03LN3A30	05/20/03	06/16/03	06/16/03
NITRATE NITRITE	001 REP	S	03LN3A30	05/20/03	06/16/03	06/16/03
NITRATE NITRITE	001 MS	S	03LN3A30	05/20/03	06/16/03	06/16/03
AMMONIA	001	S	03LAMA15	05/20/03	06/10/03	06/10/03
AMMONIA	001 REP	S	03LAMA15	05/20/03	06/10/03	06/10/03
AMMONIA	001 MS	S	03LAMA15	05/20/03	06/10/03	06/10/03
OIL & GREASE BY GRAV	001	S	03LOG026	05/20/03	06/20/03	06/21/03
OIL AND GREASE BY GR	001 REP	S	03LOG026	05/20/03	06/20/03	06/21/03

JUL 2003
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
OIL AND GREASE BY GR	001 MS	S	03LOG026	05/20/03	06/20/03	06/21/03
PH	001	S	03LPH037	05/20/03	05/30/03	05/30/03
PH	001 REP	S	03LPH037	05/20/03	05/30/03	05/30/03
B17115						
% SOLIDS	002	S	03L%S075	05/20/03	05/30/03	05/31/03
CHLORIDE BY IC	002	S	03LICB38	05/20/03	06/12/03	06/12/03
FLUORIDE BY IC	002	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRITE BY IC	002	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRATE BY IC	002	S	03LICB38	05/20/03	06/12/03	06/12/03
TOTAL CYANIDE	002	S	03LCC51	05/20/03	06/03/03	06/03/03
TOTAL CYANIDE	002 REP	S	03LCC51	05/20/03	06/03/03	06/03/03
PHOSPHATE BY IC	002	S	03LICB38	05/20/03	06/12/03	06/12/03
CHROMIUM VI	002	S	03LVI047	05/20/03	06/09/03	06/09/03
SULFATE BY IC	002	S	03LICB38	05/20/03	06/12/03	06/12/03
NITRATE NITRITE	002	S	03LN3A30	05/20/03	06/16/03	06/16/03
AMMONIA	002	S	03LAMA15	05/20/03	06/10/03	06/10/03
OIL & GREASE BY GRAV	002	S	03LOG026	05/20/03	06/20/03	06/21/03
PH	002	S	03LPH039	05/20/03	06/07/03	06/07/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
CHLORIDE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
FLUORIDE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
FLUORIDE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
NITRITE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
NITRITE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
NITRATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
NITRATE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
TOTAL CYANIDE	LCS L	S	03LCA51	N/A	06/03/03	06/03/03
TOTAL CYANIDE	LCS L	S	03LCA51	N/A	06/03/03	06/03/03
TOTAL CYANIDE	MB1	S	03LCA51	N/A	06/03/03	06/03/03
PHOSPHATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
PHOSPHATE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
CHROMIUM VI	MB1	S	03LVI047	N/A	06/09/03	06/09/03
CHROMIUM VI	MB1 BS	S	03LVI047	N/A	06/09/03	06/09/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/29/03 LVL LOT # :0305L520

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	MB1 BSD	S	03LVI047	N/A	06/09/03	06/09/03
SULFATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
SULFATE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
NITRATE NITRITE	MB1	S	03LN3A30	N/A	06/16/03	06/16/03
NITRATE NITRITE	MB1 BS	S	03LN3A30	N/A	06/16/03	06/16/03
AMMONIA	MB1	S	03LAMA15	N/A	06/10/03	06/10/03
AMMONIA	MB1 BS	S	03LAMA15	N/A	06/10/03	06/10/03
AMMONIA	MB1 BSD	S	03LAMA15	N/A	06/10/03	06/10/03
OIL & GREASE BY GRAV	MB1	S	03LOG026	N/A	06/20/03	06/21/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG026	N/A	06/20/03	06/21/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG026	N/A	06/20/03	06/21/03
TOTAL CYANIDE	LCS L	S	03LCC51	N/A	06/03/03	06/03/03
TOTAL CYANIDE	LCS L	S	03LCC51	N/A	06/03/03	06/03/03
TOTAL CYANIDE	MB1	S	03LCC51	N/A	06/03/03	06/03/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17116						
% SOLIDS	001	S	03L%S076	05/27/03	06/02/03	06/03/03
CHLORIDE BY IC	001	S	03LICB38	05/27/03	06/12/03	06/12/03
CHLORIDE BY IC	001 REP	S	03LICB38	05/27/03	06/12/03	06/12/03
CHLORIDE BY IC	001 MS	S	03LICA39	05/27/03	06/19/03	06/19/03
FLUORIDE BY IC	001	S	03LICB38	05/27/03	06/12/03	06/12/03
FLUORIDE BY IC	001 REP	S	03LICB38	05/27/03	06/12/03	06/12/03
FLUORIDE BY IC	001 MS	S	03LICA39	05/27/03	06/19/03	06/19/03
NITRITE BY IC	001	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRITE BY IC	001 REP	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRITE BY IC	001 MS	S	03LICA39	05/27/03	06/19/03	06/19/03
NITRATE BY IC	001	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRATE BY IC	001 REP	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRATE BY IC	001 MS	S	03LICA39	05/27/03	06/19/03	06/19/03
TOTAL CYANIDE	001	S	03LC053	05/27/03	06/07/03	06/07/03
TOTAL CYANIDE	001 REP	S	03LC053	05/27/03	06/07/03	06/07/03
TOTAL CYANIDE	001 MS	S	03LC053	05/27/03	06/07/03	06/07/03
PHOSPHATE BY IC	001	S	03LICB38	05/27/03	06/12/03	06/12/03
PHOSPHATE BY IC	001 REP	S	03LICB38	05/27/03	06/12/03	06/12/03
PHOSPHATE BY IC	001 MS	S	03LICA39	05/27/03	06/19/03	06/19/03
CHROMIUM VI	001	S	03LVI048	05/27/03	06/12/03	06/12/03
CHROMIUM VI	001 REP	S	03LVI048	05/27/03	06/12/03	06/12/03
CHROMIUM VI	001 MS	S	03LVI048	05/27/03	06/12/03	06/12/03
CHROMIUM VI	001 MSD	S	03LVI048	05/27/03	06/12/03	06/12/03
SULFATE BY IC	001	S	03LICB38	05/27/03	06/12/03	06/12/03
SULFATE BY IC	001 REP	S	03LICB38	05/27/03	06/12/03	06/12/03
SULFATE BY IC	001 MS	S	03LICA39	05/27/03	06/19/03	06/19/03
NITRATE NITRITE	001	S	03LN3A30	05/27/03	06/16/03	06/16/03
NITRATE NITRITE	001 REP	S	03LN3A30	05/27/03	06/16/03	06/16/03
NITRATE NITRITE	001 MS	S	03LN3A30	05/27/03	06/16/03	06/16/03
AMMONIA	001	S	03LAMA15	05/27/03	06/10/03	06/10/03
AMMONIA	001 REP	S	03LAMA15	05/27/03	06/10/03	06/10/03
AMMONIA	001 MS	S	03LAMA15	05/27/03	06/10/03	06/10/03
OIL & GREASE BY GRAV	001	S	03LOG026	05/27/03	06/20/03	06/21/03
PH	001	S	03LPH039	05/27/03	06/07/03	06/07/03
PH	001 REP	S	03LPH039	05/27/03	06/07/03	06/07/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17123						
% SOLIDS	002	S	03L%S076	05/27/03	06/02/03	06/03/03
CHLORIDE BY IC	002	S	03LICB38	05/27/03	06/12/03	06/12/03
FLUORIDE BY IC	002	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRITE BY IC	002	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRATE BY IC	002	S	03LICB38	05/27/03	06/12/03	06/12/03
TOTAL CYANIDE	002	S	03LC053	05/27/03	06/07/03	06/07/03
PHOSPHATE BY IC	002	S	03LICB38	05/27/03	06/12/03	06/12/03
CHROMIUM VI	002	S	03LVI048	05/27/03	06/12/03	06/12/03
SULFATE BY IC	002	S	03LICB38	05/27/03	06/12/03	06/12/03
NITRATE NITRITE	002	S	03LN3A30	05/27/03	06/16/03	06/16/03
AMMONIA	002	S	03LAMA15	05/27/03	06/10/03	06/10/03
OIL & GREASE BY GRAV	002	S	03LOG026	05/27/03	06/20/03	06/21/03
OIL AND GREASE BY GR	002 REP	S	03LOG026	05/27/03	06/20/03	06/21/03
OIL AND GREASE BY GR	002 MS	S	03LOG026	05/27/03	06/20/03	06/21/03
PH	002	S	03LPH039	05/27/03	06/07/03	06/07/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
CHLORIDE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
CHLORIDE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
CHLORIDE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
FLUORIDE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
FLUORIDE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
FLUORIDE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
FLUORIDE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
NITRITE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
NITRITE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
NITRATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
NITRATE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
NITRITE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
NITRITE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
NITRATE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
NITRATE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
TOTAL CYANIDE	LCS L	S	03LC053	N/A	06/07/03	06/07/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2242

DATE RECEIVED: 05/30/03 LVL LOT # :0305L533

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	LCS L	S	03LC053	N/A	06/07/03	06/07/03
TOTAL CYANIDE	MB1	S	03LC053	N/A	06/07/03	06/07/03
PHOSPHATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
PHOSPHATE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
PHOSPHATE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
PHOSPHATE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
CHROMIUM VI	MB1	S	03LVI048	N/A	06/12/03	06/12/03
CHROMIUM VI	MB1 BS	S	03LVI048	N/A	06/12/03	06/12/03
CHROMIUM VI	MB1 BSD	S	03LVI048	N/A	06/12/03	06/12/03
SULFATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03
SULFATE BY IC	MB1 BS	S	03LICB38	N/A	06/12/03	06/12/03
SULFATE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
SULFATE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
NITRATE NITRITE	MB1	S	03LN3A30	N/A	06/16/03	06/16/03
NITRATE NITRITE	MB1 BS	S	03LN3A30	N/A	06/16/03	06/16/03
AMMONIA	MB1	S	03LAMA15	N/A	06/10/03	06/10/03
AMMONIA	MB1 BS	S	03LAMA15	N/A	06/10/03	06/10/03
AMMONIA	MB1 BSD	S	03LAMA15	N/A	06/10/03	06/10/03
OIL & GREASE BY GRAV	MB1	S	03LOG026	N/A	06/20/03	06/21/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG026	N/A	06/20/03	06/21/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG026	N/A	06/20/03	06/21/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-006 H2242
LVL#: 0305L520 and 0305L533

W.O.#: 11343-606-001-9999-00
Date Received: 05-29,30-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

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

3. The 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. The duplicate LCS for Ammonia and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Chromium VI, Sulfate, Nitrate Nitrite, Ammonia and Oil and Grease were within the 75-125% control limits.

8. The replicate analyses for Percent Solids, Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Chromium VI, Sulfate, Nitrate Nitrite, Ammonia, Oil and Grease and pH 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

06-27-03
Date

njp\i05-520,533

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 29 pages.

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 / 9014	__ 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	✓ 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: Chloride, Fluoride, Nitrite, **Method:** EPA 300.0 (mod.)

Other: Nitrate, Phosphate, Sulfate **Method**

Nitrate Nitrite EPA 353.2 (mod.)

Ammonia EPA 350.3

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 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17124	% Solids	87.3		%	0.01	1.0
		Chloride by IC	1.4	u	MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.43	u	MG/KG	1.43	1.0
		Nitrate by IC	2.41		MG/KG	1.43	1.0
		Cyanide, Total	0.50	u	MG/KG	0.50	1.0
		Phosphate by IC	15.0		MG/KG	1.4	1.0
		Chromium VI	0.46	u	MG/KG	0.46	1.0
		Sulfate by IC	26.4		MG/KG	1.4	1.0
		Nitrate Nitrite	1.1		MG/KG	0.23	1.0
		Ammonia, as N	5.3	u	MG/KG	5.3	1.0
		Oil & Grease Gravimetri	3620		MG/KG	763	1.0
		pH	6.4		SOIL PH	0.01	1.0
-002	B17115	% Solids	88.5		%	0.01	1.0
		Chloride by IC	1.4	u	MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.41	u	MG/KG	1.41	1.0
		Nitrate by IC	119		MG/KG	7.06	5.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	26.9		MG/KG	1.4	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Sulfate by IC	21.6		MG/KG	1.4	1.0
		Nitrate Nitrite	25.8		MG/KG	1.1	5.0
		Ammonia, as N	6.5	u	MG/KG	6.5	1.0
		Oil & Grease Gravimetri	753	u	MG/KG	753	1.0
		pH	6.5		SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/27/03

CLIENT: TNUHANFORD F03-006 H2242

LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LICB38-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	03LCA51-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	03LVI047-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	03LN3A30-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	03LAMA15-MB1	Ammonia, as N	5.0	u	MG/KG	5.0	1.0
BLANK10	03LOG026-MB1	Oil & Grease Gravimetri	667	u	MG/KG	667	1.0
BLANK1	03LCC51-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B17124	Chloride by IC	30.1	1.2	28.6	100.8	1.0
		Fluoride by IC	29.3	0.17	28.6	101.9	1.0
		Nitrite by IC	28.8	1.43u	28.6	100.7	1.0
		Nitrate by IC	31.9	2.41	28.6	103.0	1.0
		Cyanide, Total	5.62	0.50u	5.70	98.7	1.0
		Phosphate by IC	45.8	15.0	28.6	107.7	1.0
		Soluble Chromium VI	4.5	0.45u	4.6	92.8	1.0
		Insoluble Chromium VI	1370	0.45u	1380	99.3	100
		Sulfate by IC	58.0	26.4	28.6	110.5	1.0
		Nitrate Nitrite	6.8	1.1	5.9	97.9	1.0
		Ammonia, as N	205	5.3 u	228	90.0	1.0
		Oil & Grease Gravimetr	13500	3620	9080	108.5	1.0
BLANK10	03LICB38-MB1	Chloride by IC	24.6	1.2 u	25.0	98.4	1.0
		Fluoride by IC	24.7	1.2 u	25.0	98.8	1.0
		Nitrite by IC	24.6	1.25u	25.0	98.5	1.0
		Nitrate by IC	25.0	1.25u	25.0	100.0	1.0
		Phosphate by IC	25.1	1.2 u	25.0	100.3	1.0
		Sulfate by IC	25.0	1.2 u	25.0	100.1	1.0
BLANK10	03LVI047-MB1	Soluble Chromium VI	3.6	0.40u	4.0	91.2	1.0
		Insoluble Chromium VI	1290	0.40u	1370	94.1	100
BLANK10	03LN3A30-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.4	1.0
BLANK10	03LAMA15-MB1	Ammonia, as N	195	5.0 u	200	97.5	1.0
		Ammonia, as N MSD	208	5.0 u	200	104.2	1.0
BLANK10	03LOG026-MB1	Oil & Grease Gravimetr	7950	667 u	7930	100.2	1.0
		Oil & Grease - Grav M	7870	667 u	7930	99.2	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	03LAMA15-MB1	Ammonia, as N	97.5	104.2	6.7
BLANK10	03LOG026-MB1	Oil & Grease - Grav	100.2	99.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17124	% Solids	87.3	87.4	0.13	1.0
		Chloride by IC	1.4 u	1.4 u	NC	1.0
		Fluoride by IC	1.4 u	1.4 u	NC	1.0
		Nitrite by IC	1.43u	1.43u	NC	1.0
		Nitrate by IC	2.41	2.46	2.1	1.0
		Cyanide, Total	0.50u	0.54u	NC	1.0
		Phosphate by IC	15.0	16.4	9.1	1.0
		Chromium VI	0.46u	0.46u	NC	1.0
		Sulfate by IC	26.4	26.8	1.5	1.0
		Nitrate Nitrite	1.1	1.1	1.2	1.0
		Ammonia, as N	5.3 u	6.9 u	NC	1.0
		Oil & Grease Gravimetri	3620	3470	4.2	1.0
		pH	6.4	6.4	0.0	1.0
-002REP	B17115	Cyanide, Total	0.53u	0.54u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L520

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LCA51-LCS1	Cyanide, Total LCS	1.89	2.0	MG/KG	94.4
LCSS2	03LCA51-LCS2	Cyanide, Total LCS	9.96	10.0	MG/KG	99.6
LCSS1	03LCC51-LCS1	Cyanide, Total LCS	1.92	2.0	MG/KG	95.9
LCSS2	03LCC51-LCS2	Cyanide, Total LCS	9.96	10.0	MG/KG	99.6

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242

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

LVL LOT #: 0305L533

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17116	% Solids	91.8		%	0.01	1.0
		Chloride by IC	1.4	u	MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.36	u	MG/KG	1.36	1.0
		Nitrate by IC	1.36	u	MG/KG	1.36	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	35.6		MG/KG	1.4	1.0
		Nitrate Nitrite	0.18	u	MG/KG	0.18	1.0
		Ammonia, as N	4.4	u	MG/KG	4.4	1.0
		Oil & Grease Gravimetri	726	u	MG/KG	726	1.0
		pH	6.9		SOIL PH	0.01	1.0
-002	B17123	% Solids	92.0		%	0.01	1.0
		Chloride by IC	1.4	u	MG/KG	1.4	1.0
		Fluoride by IC	1.4		MG/KG	1.4	1.0
		Nitrite by IC	1.36	u	MG/KG	1.36	1.0
		Nitrate by IC	1.36	u	MG/KG	1.36	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	35.1		MG/KG	1.4	1.0
		Nitrate Nitrite	0.21	u	MG/KG	0.21	1.0
		Ammonia, as N	5.4	u	MG/KG	5.4	1.0
		Oil & Grease Gravimetri	725	u	MG/KG	725	1.0
		pH	7.2		SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LICB38-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	03LICA39-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	03LC053-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	03LVI048-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	03LN3A30-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	03LAMA15-MB1	Ammonia, as N	5.0	u	MG/KG	5.0	1.0
BLANK10	03LOG026-MB1	Oil & Grease Gravimetri	667	u	MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B17116	Chloride by IC	53.0	0.14	54.4	97.0	2.0
		Fluoride by IC	53.9	0.22	54.4	98.5	2.0
		Nitrite by IC	52.5	1.36u	54.4	96.4	2.0
		Nitrate by IC	52.5	1.36u	54.4	96.4	2.0
		Cyanide, Total	5.04	0.53u	5.11	98.7	1.0
		Phosphate by IC	52.1	1.4 u	54.4	95.7	2.0
		Soluble Chromium VI	4.2	0.44u	4.4	88.4	1.0
		Insoluble Chromium VI	1540	0.44u	1640	93.8	100
		Sulfate by IC	92.0	35.6	54.4	103.6	2.0
		Nitrate Nitrite	5.2	0.18u	5.4	96.8	1.0
		Ammonia, as N	207	4.4 u	216	96.0	1.0
-002	B17123	Oil & Grease Gravimetr	8790	725 u	8630	101.9	1.0
BLANK10	03LICB38-MB1	Chloride by IC	24.6	1.2 u	25.0	98.4	1.0
		Fluoride by IC	24.7	1.2 u	25.0	98.8	1.0
		Nitrite by IC	24.6	1.25u	25.0	98.5	1.0
		Nitrate by IC	25.0	1.25u	25.0	100.0	1.0
		Phosphate by IC	25.1	1.2 u	25.0	100.3	1.0
		Sulfate by IC	25.0	1.2 u	25.0	100.1	1.0
BLANK10	03LICA39-MB1	Chloride by IC	23.9	1.2 u	25.0	95.8	1.0
		Fluoride by IC	24.2	1.2 u	25.0	97.0	1.0
		Nitrite by IC	23.5	1.25u	25.0	93.9	1.0
		Nitrate by IC	24.1	1.25u	25.0	96.4	1.0
		Phosphate by IC	24.4	1.2 u	25.0	97.4	1.0
		Sulfate by IC	24.4	1.2 u	25.0	97.8	1.0
BLANK10	03LVI048-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.6	1.0
		Insoluble Chromium VI	1120	0.40u	1180	95.1	100
BLANK10	03LN3A30-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.4	1.0
BLANK10	03LAMA15-MB1	Ammonia, as N	195	5.0 u	200	97.5	1.0
		Ammonia, as N MSD	208	5.0 u	200	104.2	1.0
BLANK10	03LOG026-MB1	Oil & Grease Gravimetr	7950	667 u	7930	100.2	1.0
		Oil & Grease - Grav M	7870	667 u	7930	99.2	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	03LAMA15-MB1	Ammonia, as N	97.5	104.2	6.7
BLANK10	03LOG026-MB1	Oil & Grease - Grav	100.2	99.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242 LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17116	Chloride by IC	1.4 u	1.4 u	NC	1.0
		Fluoride by IC	1.4 u	1.4 u	NC	1.0
		Nitrite by IC	1.36u	1.36u	NC	1.0
		Nitrate by IC	1.36u	1.36u	NC	1.0
		Cyanide, Total	0.53u	0.50u	NC	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Chromium VI	0.44u	0.44u	NC	1.0
		Sulfate by IC	35.6	35.8	0.44	1.0
		Nitrate Nitrite	0.18u	0.22u	NC	1.0
		Ammonia, as N	4.4 u	5.0 u	NC	1.0
		pH	6.9	6.9	0.1	1.0
-002REP	B17123	Oil & Grease Gravimetri	725 u	725 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/27/03

CLIENT: TNUHANFORD F03-006 H2242

LVL LOT #: 0305L533

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LC053-LCS1	Cyanide, Total LCS	1.93	2.0	MG/KG	96.5
LCSS2	03LC053-LCS2	Cyanide, Total LCS	10.2	10.0	MG/KG	101.7

(6) VOA BNA P/PCB from Metals DVA N.Cr

22

Lionville Laboratory Use Only
0305L520

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: [redacted] F03-006
Est. Final Post Sampling Date:
Project #: 113[redacted]-0002-091-9999.00
Project Contact/Phone #:
Lionville Laboratory Project Manager: DJ
QC: SPCC Del: STD TAT: 30 days

Date Rec'd: 5/29/03 Date Due: 6-28-03

		A	B	C	D	E	F	G
Refrigerator #		1	2	2	2	2	2	2
#/Type Container	Liquid	[redacted]	[redacted]	[redacted]				
	Solid	1PGL	1PGL	1PGL	1PGL	1PGL	1PGL	1PGL
Volume	Liquid							
	Solid	60	125	60	60	125	60	60
Preservatives								

ANALYSES REQUESTED →

ORGANIC				INORG					
VOA	BNA	Pest/PCB	Herb	Metal	CN	Cr Hex	Ic Anions	NO2/NO3	oil + grease

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260C 8270 + 8260	8625x 8080 OG-90						MET ①		ICP 6	INORG ①	IN3N2	IOG GR		
S - Soil	001	B17124	✓	✓	S	5/20/03	0945	1	1						1		1	1	1	1		
SE - Sediment	002	B17115			⊥	⊥	0830	1	✓						1		1	✓	1	1		
SO - Solid																						
SL - Sludge																						
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EPA/CLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions: SAF # F03-006
Run Matrix QC on -001
MET ①: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG ①: IC: Cl, F, NO_3, NO_2, PO_4, SO_4
IN3N, IPH, ICNTO

DATE/REVISIONS:
5-30-03 1. ~~Cancel 06244~~ Add OGCSC
6-2-03 2. Add to -002 same analyses as in -001
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	JPerry	5/29/03	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 792256788451
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: 1.7 °C

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector Johansen/Pope/Pfister	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 MOS-20-03 216-A-10 (C3247) ~~62.5-55.R~~ 52'-54'; 54'-56'	SAF No. F03-006	
Ice Chest No. ERC 03 101	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To RECRA ~~EBERLINE SERVICES (Formerly TMA)~~ 5/20/03	Offsite Property No. A030240		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A MOS-23-0 Radioactive TLD: B17131, B17132

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
~~B17115~~	~~SOIL~~	~~5/20/03~~	~~0830~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		~~N/A~~	52803
B17124	SOIL	5/20/03	0945	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From [signature]	1317 5/20/03	Received By/Stored In HO-64-427 REF	5/20/03 1317
Relinquished By/Removed From HO-64-427 REF	5/20/03 1120	Received By/Stored In [signature]	5/20/03 1120
Relinquished By/Removed From [signature]	5/20/03 1150	Received By/Stored In REF 1A 3728	5/20/03 1150
Relinquished By/Removed From REF 1A 3728	52803 0800	Received By/Stored In SJGALE	52803 0800
Relinquished By/Removed From SJGALE	52803 0800	Received By/Stored In FED EX	
Relinquished By/Removed From FedEX	5/29/03 1000	Received By/Stored In JPerry	5/29/03 1000

SPECIAL INSTRUCTIONS
~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) Technetium-99; ~~Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

[signature] 5/20/03

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)

23

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-106	Page 1 of 1

Collector: Johansen/Pope/Pfister	Company Contact: LC Hulstrom	Telephone No.: 373-3928	Project Coordinator: TRENT, SJ
Project Designation: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location: 216-A-10 (C3247) ~~52.5-55 R~~ MJS-20-03 52'-54'; 54'-56'		SAF No.: F03-006
Ice Chest No.: ERC-02 010	Field Logbook No.: HNF-N-3361	COA: 117504ES10	Method of Shipment: Federal Express
Shipped To: RECRA ~~FEDERLINE SERVICES (Formerly TMA)~~ 9Sr 5/20/03	Offsite Property No.: PSR 107187		Bill of Lading/Air Bill No.: N/A

Price Code: 8N

Data Turnaround: 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS: ~~N/A~~ MJS-23-03 Radioactive TRU TD: B17131, B17132

Special Handling and/or Storage: N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1		1	1	1	1	1	1	1	1	
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions. VOA 8260	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time								
B17115	SOIL	5/20/03	0830	X	X	X	X	X	X	X	
~~B17124~~	~~SOIL~~	~~5/20/03~~	~~0945~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Johansen/Pope/Pfister	5/20/03 1317	HO-Cat-427 Ref	5/20/03 1317
HO-Cat-427 Ref	5/20/03 1120	Johansen/Pope/Pfister	5/20/03 1120
Johansen/Pope/Pfister	5/20/03 1150	REF 1A 3728	5/20/03 1150
REF 1A 3728	52803 0800	S. Gale	52803 0800
S. Gale	52803 0800	FED EX	
Fed Ex	5-29-03 1000		

Sign/Print Names

SPECIAL INSTRUCTIONS

~~** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14.~~ ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}
(2) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Boron, Copper, Nickel}; Mercury - 7471 - (CV)
(4) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
~~(5) 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~~
(6) ~~Technetium-99; Strontium-89,90 – Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-~~

9Sr 5/20/03

9Sr 5/24/03

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)

24

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU Hanford

rchase Order/Project:

DATE: 5/09/03

AF# / SOW# / Release #: F03-000

aboratory SDG #: 03054520

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? See below	☑ 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-03-101 / TRK# 7922 5678 8451 / 1.7°C (Sample 001)
ERC-03-100 / 839350745320 / 5.8°C (Sample 002)

Laboratory Sample Custodian: J Perry 5/09/03 1000

Laboratory Project Manager:

(6) VOA BNA PCB

Lionville Laboratory Use Only: 0305L533

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

26

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNT Hanford F03-006
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPK Del: STD TAT: 30 days

Date Rec'd: 5/30/03 Date Due: 6-29-03

		A	B			C	D		E		F	G	H			
Refrigerator #		1	2			1	2		2		2	2	2			
#/Type Container	Liquid															
	Solid	AGL	AGL			AGL	AGL		AGL		AGL	AGL	AGL			
Volume	Liquid															
	Solid	60	125 60			60 125	60		60 125		60	125	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb	Gas/Eth	Oil & grease		INORG: Metal	CN	Cr6	TCL cations	NO2/NO3			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X ODBD 0GBD			OGCSC	1OGGR		MET (1)		ICR6	INORG (1)	INN3N2			
001	B17116			S	5/27/03	1030	1	1			1	1		1		1	1	1			
002	B17123			⊥	⊥	⊥	1	1			1	1		1		1	1	1			

Special Instructions: SAF # F03-006
Run Matrix QC
MET (1): RCRA + Sb, Be, Bi, B, Cu, Ni
INORG (1): IC: Cl, F, NO_3, NO_2, PO_4, SO_4
INH_3N, IPH, ICNTO

DATE/REVISIONS:
002C 1. Label says see special item (5). This is not a requested item. No bottle was received for item (1) so this bottle was assigned for (1).
2.
002B,C,E,G ~~Bottle size does not match size~~ indicated on COC.
4.
6-2-03 5. Change 0624X to 0624H
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # See below
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. 4 °C

Discrepancies Between Samples Labels and COC Record Y or N
NOTES:

Relinquished by	Received by	Date	Time
FedEx	J Perry	5/30/03	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

TRK# 7907 9459 8746

27.

FH-Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-006-107	Page 1 of 1

Collector: Johansen/Pope/Pfister	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: 216-A-10 (C3247) 62.5-65 ft	SAF No.: F03-006	Air Quality ☐
Ice Chest No.: ERC 03-103	Field Logbook No.: HNF-N-3361 — COA: 117504ES10	Method of Shipment: Federal Express	
Shipped To: MJS 5-27-03 ~~EBERLINE SERVICES (Formerly TMA)~~ Reera	Offsite Property No.: 030 226	Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS B17133; ~~B17134~~ MJS 5-27-03 N/A
Radiological Tie To: ~~B17186~~ MJS 5-27-03 (B17116; B17123)

Special Handling and/or Storage
N/A

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time										
B17116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B17123	Soil	5-27-03	1030	X	X	X	X	X	X	X		MJS 5-27-03	
~~B12 B17122~~ MJS 5-27-03	~~Soil~~	~~5-27-03~~	~~1110~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		~~MJS 5-27-03~~	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible] TH	5/27/03 1415	R. Fooo R. Fehr ERC	5-27-03 1415
R. Fooo R. Fehr	5-27-03 1415	IB 3728	5-27-03 1417
R. Fooo R. Fehr IB	5-27-03 1000	R. Fooo R. Fehr	5-29-03 1000
R. Fooo R. Fehr ERC	5-29-03 1050	Fed Ex	
Fed Ex	5/30/03 0945	JPerry	5/30/03 0945

SPECIAL INSTRUCTIONS
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
(2) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)
(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
(5) ~~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~~
(6) ~~Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129~~; Nickel-63; Neptunium-237

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
MJS 5-27-03

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	F03-006-114	Page 2 of 2

Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location ~~TMS 5-27-03~~ 216-A-10 (C3247) ~~318.5-321 ft~~ 62.5-65'		SAF No. F03-006
Ice Chest No. ERC 03 102	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express
Shipped To ~~TMS 5-27-03~~ ~~EBERLINE SERVICES (Formerly TMA)~~ Beera	Offsite Property No. 17030-276		Bill of Lading/Air Bill No. SEE OSR

Price Code 8N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

~~N/A~~ Radioactive TILTO: See Below

Special Handling and/or Storage

N/A

Preservation	None	Cool 4C									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	mL	60 mL									
SAMPLE ANALYSIS	Tritium - H3	See Special Instruction (7)		TILTO:							

Sample No.	Matrix *	Sample Date	Sample Time											
B17123	SOIL	5-27-03	1030		X		B17133							
B17126	Soil	5-27-03	1030		X		B17133							
~~B17122~~	~~Soil~~	~~5-27-03~~	~~1110~~		~~X~~		~~B17134~~							
Re 5.29.03														

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	5-27-03 1415	ERC [illegible]	5-27-03 1415
[illegible]	5-27-03 1410	[illegible]	5-27-03 1415
IB 3728	5-29-03 10:00	[illegible]	5-29-03 10:00
[illegible] ERC	5-29-03 1000	1st col Ex	
FedEx	5/30/03 0945	JPerry	5/30/03 0945

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

(7) VOA-8260A (TCL); VOA-8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}

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

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 5/30/03

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

Laboratory SDG #: 03051533

NOTE: 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 # (1)
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded? 790794598746	☑ 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 # (3)
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 # (2)
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-03-103 / 4°C

(1) No custody seals

(2) 002C Label says see item (5). This is not a requested item. No bottle was received for item (1), so this bottle was assigned to (1)

002B,C,E,G - Bottle size does not match client C (60 mL to a 125 mL or vice-versa)

Laboratory Sample Custodian: JRemy 5/30/03 0945

Laboratory Project Manager: