



EBERLINE
SERVICES

0060798

July 22, 2003

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

Reference: P.O. #630
Eberline Services R3-06-005-7529, SDG H2250

Dear Mr. Trent:

Enclosed is the data report for four solid samples designated under SAF No. F03-006 received at Eberline Services on June 2, 4, and 6, 2003. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

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Analytical Services
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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2250 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

No 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

The U samples in SDG H2250 were batched with the U samples in SDG H2242 (Group R305191-7528). No problems were encountered during the course of the analyses.

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

The Pu samples were reanalyzed because samples B17124 and B17115 in SDG H2242 (Group R305191-7528) contaminated the Pu samples in SDG H2250.

The data from the reanalysis of the Pu samples is reported herein. The Pu-239/240 RPD between sample B17122 and its sample duplicate was 117%, greater than the contract limit of 35%. Sample B17122 and its sample duplicate were recounted, but the Pu-239/240 RPD was not improved. Eberline Services will reanalyze the sample if requested by FHI. No other problems were encountered during the course of the reanalyses.

2.12 Americium-241 Analyses

Due to a low yield (12%) sample B17122 was reworked in chemistry. The data from the rework is reported herein. No other problems were encountered during the course of the analyses.

The Am-241 samples in SDG H2250 were batched with the Am-241 samples in SDG H2242 (Group R305191-7528).

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 C. Mannion
Program Manager

7/22/13

Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

SDG 7529
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2250

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

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

SAMPLE DELIVERY GROUP H2250

SDG 7529
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2250

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.

REPORT GUIDES

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2250

SDG 7529
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG H2250

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.

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

LAB SAMPLE SUMMARY

SDG 7529
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2250

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R305191-05	Lab Control Sample		SOLID		F03-006		
R305191-06	Method Blank		SOLID		F03-006		
R306005-01	B17122	216-A-10 (C3247)	SOLID		F03-006	F03-006-107	05/27/03 11:10
R306005-02	B171B8	216-B-12 (C3246)	SOLID		F03-006	F03-006-134	05/29/03 12:50
R306005-03	B171C1-B	216-B-12 (C3246)	SOLID		F03-006	F03-006-179	06/03/03 10:15
R306005-04	B17218-B	216-B-12 (C3246)	SOLID		F03-006	F03-006-179	06/03/03 10:15
R306005-05	Lab Control Sample		SOLID		F03-006		
R306005-06	Method Blank		SOLID		F03-006		
R306005-07	Duplicate (R306005-01)	216-A-10 (C3247)	SOLID		F03-006		05/27/03 11:10
R306005-08	Spike (R306005-01)	216-A-10 (C3247)	SOLID		F03-006		05/27/03 11:10
R306005-09	Lab Control Sample		SOLID		F03-006		
R306005-10	Method Blank		SOLID		F03-006		
R306005-11	Duplicate (R306005-01)	216-A-10 (C3247)	SOLID		F03-006		05/27/03 11:10

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

SDG 7529
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2250

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7528		Method Blank	SOLID						R305191-06	7528-006
		Lab Control Sample	SOLID						R305191-05	7528-005
7529	F03-006-107	B17122	SOLID	89.0	167.6 g		06/06/03 10		R306005-01	7529-001
	F03-006-134	B17188	SOLID	95.0	184.7 g		06/06/03 8		R306005-02	7529-002
	F03-006-179	B171C1-B	SOLID	98.0	152.4 g		06/06/03 3		R306005-03	7529-003
		B17218-B	SOLID	98.1	148.2 g		06/06/03 3		R306005-04	7529-004
		Method Blank	SOLID						R306005-06	7529-006
		Method Blank	SOLID						R306005-10	7529-010
		Lab Control Sample	SOLID						R306005-05	7529-005
		Lab Control Sample	SOLID						R306005-09	7529-009
		Duplicate (R306005-01)	SOLID	89.0	167.6 g		06/06/03 10		R306005-07	7529-007
		Duplicate (R306005-01)	SOLID	89.0	167.6 g		06/06/03 10		R306005-11	7529-011
		Spike (R306005-01)	SOLID	89.0	167.6 g		06/06/03 10		R306005-08	7529-008

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SAMPLE DELIVERY GROUP H2250

SDG 7529
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2250

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALIFIERS	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Alpha Spectroscopy										
AM	SOLID	Americium 241 in Soil	7071-037	5.0	2			1	1	1/1
NP	SOLID	Neptunium in Soil	7071-044	5.0	4			1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	7071-044	5.0	2			1	1	1/1
TH	SOLID	Thorium, Isotopic in Soil	7071-044	5.0	4			1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	7071-037	5.0	2			1	1	1/1
Beta Counting										
SR	SOLID	Total Strontium in Soil	7071-044	10.0	4			1	1	1/1
TC	SOLID	Technetium 99 in Soil	7071-044	10.0	4			1	1	1/1
Gamma Spectroscopy										
GAM	SOLID	Gamma Scan	7071-044	15.0	2			1	1	1/1
I	SOLID	Iodine 129 in Soil	7071-044	10.0	4			1	1	1/1
Kinetic Phosphorimetry (KPA)										
U_T	SOLID	Uranium, Total in Soil	7071-044	9.0	2			1	1	1/1
Liquid Scintillation Counting										
C	SOLID	Carbon 14 in Soil	7071-044	10.0	4			1	1	1/1
H	SOLID	Tritium in Soil	7071-044	10.0	4			1	1	1/1 1/1 X
NI_L	SOLID	Nickel 63 in Soil	7071-044	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.

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

LAB WORK SUMMARY

SDG 7529
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2250

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		SOLID	7528-005	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
				7528-005	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
F03-006										
R305191-06	Method Blank		SOLID	7528-006	AM		07/02/03	07/17/03	MCM	Americium 241 in Soil
				7528-006	U		07/08/03	07/17/03	MCM	Uranium, Isotopic in Soil
F03-006										
R306005-01 05/27/03 06/06/03	B17122 216-A-10 (C3247) F03-006-107		SOLID	7529-001	AM		07/02/03	07/21/03	MCM	Americium 241 in Soil
				7529-001	C		07/09/03	07/21/03	MCM	Carbon 14 in Soil
				7529-001	GAM		06/22/03	07/21/03	MCM	Gamma Scan
				7529-001	H		07/03/03	07/21/03	MCM	Tritium in Soil
				7529-001	I		07/08/03	07/21/03	MCM	Iodine 129 in Soil
				7529-001	NI_L		07/09/03	07/21/03	MCM	Nickel 63 in Soil
				7529-001	NP		07/10/03	07/21/03	MCM	Neptunium in Soil
				7529-001	PU	A1	07/19/03	07/21/03	MCM	Plutonium, Isotopic in Solids
				7529-001	SR		07/02/03	07/21/03	MCM	Total Strontium in Soil
				7529-001	TC		07/06/03	07/21/03	MCM	Technetium 99 in Soil
				7529-001	TH	R1	07/18/03	07/21/03	MCM	Thorium, Isotopic in Soil
				7529-001	U		07/08/03	07/21/03	MCM	Uranium, Isotopic in Soil
				7529-001	U_T		06/19/03	07/21/03	MCM	Uranium, Total in Soil
R306005-02 05/29/03 06/06/03	B171B8 216-B-12 (C3246) F03-006-134		SOLID	7529-002	AM		07/02/03	07/21/03	MCM	Americium 241 in Soil
				7529-002	C		07/10/03	07/21/03	MCM	Carbon 14 in Soil
				7529-002	GAM		06/22/03	07/21/03	MCM	Gamma Scan
				7529-002	H		07/03/03	07/21/03	MCM	Tritium in Soil
				7529-002	I		07/09/03	07/21/03	MCM	Iodine 129 in Soil
				7529-002	NI_L		07/09/03	07/21/03	MCM	Nickel 63 in Soil
				7529-002	NP		07/10/03	07/21/03	MCM	Neptunium in Soil
				7529-002	PU	A1	07/18/03	07/21/03	MCM	Plutonium, Isotopic in Solids
				7529-002	SR		07/02/03	07/21/03	MCM	Total Strontium in Soil
				7529-002	TC		07/04/03	07/21/03	MCM	Technetium 99 in Soil
				7529-002	TH		07/11/03	07/21/03	MCM	Thorium, Isotopic in Soil
				7529-002	U		07/08/03	07/21/03	MCM	Uranium, Isotopic in Soil
				7529-002	U_T		06/19/03	07/21/03	MCM	Uranium, Total in Soil

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

WORK SUMMARY, cont.

SDG 7529
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2250

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R306005-03	B171C1-B			7529-003	C		07/10/03	07/21/03	MCM	Carbon 14 in Soil
06/03/03	216-B-12 (C3246)		SOLID	7529-003	H		07/03/03	07/21/03	MCM	Tritium in Soil
06/06/03	F03-006-179	F03-006		7529-003	I		07/09/03	07/21/03	MCM	Iodine 129 in Soil
				7529-003	NI_L		07/09/03	07/21/03	MCM	Nickel 63 in Soil
				7529-003	NP		07/10/03	07/21/03	MCM	Neptunium in Soil
				7529-003	SR		07/02/03	07/21/03	MCM	Total Strontium in Soil
				7529-003	TC		07/05/03	07/21/03	MCM	Technetium 99 in Soil
				7529-003	TH		07/11/03	07/21/03	MCM	Thorium, Isotopic in Soil
R306005-04	B17218-B			7529-004	C		07/10/03	07/21/03	MCM	Carbon 14 in Soil
06/03/03	216-B-12 (C3246)		SOLID	7529-004	H		07/03/03	07/21/03	MCM	Tritium in Soil
06/06/03	F03-006-179	F03-006		7529-004	I		07/10/03	07/21/03	MCM	Iodine 129 in Soil
				7529-004	NI_L		07/09/03	07/21/03	MCM	Nickel 63 in Soil
				7529-004	NP		07/10/03	07/21/03	MCM	Neptunium in Soil
				7529-004	SR		07/02/03	07/21/03	MCM	Total Strontium in Soil
				7529-004	TC		07/04/03	07/21/03	MCM	Technetium 99 in Soil
				7529-004	TH		07/11/03	07/21/03	MCM	Thorium, Isotopic in Soil
R306005-05	Lab Control Sample			7529-005	C		07/10/03	07/21/03	MCM	Carbon 14 in Soil
			SOLID	7529-005	GAM		06/22/03	07/21/03	MCM	Gamma Scan
		F03-006		7529-005	H		07/03/03	07/21/03	MCM	Tritium in Soil
				7529-005	I		07/10/03	07/21/03	MCM	Iodine 129 in Soil
				7529-005	NI_L		07/04/03	07/21/03	MCM	Nickel 63 in Soil
				7529-005	NP		07/10/03	07/21/03	MCM	Neptunium in Soil
				7529-005	SR		07/02/03	07/21/03	MCM	Total Strontium in Soil
				7529-005	TC		07/04/03	07/21/03	MCM	Technetium 99 in Soil
				7529-005	TH		07/11/03	07/21/03	MCM	Thorium, Isotopic in Soil
				7529-005	U_T		06/19/03	07/21/03	MCM	Uranium, Total in Soil
R306005-06	Method Blank			7529-006	C		07/09/03	07/21/03	MCM	Carbon 14 in Soil
			SOLID	7529-006	GAM		06/22/03	07/21/03	MCM	Gamma Scan
		F03-006		7529-006	H		07/03/03	07/21/03	MCM	Tritium in Soil
				7529-006	I		07/11/03	07/21/03	MCM	Iodine 129 in Soil
				7529-006	NI_L		07/04/03	07/21/03	MCM	Nickel 63 in Soil
				7529-006	NP		07/10/03	07/21/03	MCM	Neptunium in Soil
				7529-006	SR		07/02/03	07/21/03	MCM	Total Strontium in Soil
				7529-006	TC		07/04/03	07/21/03	MCM	Technetium 99 in Soil
				7529-006	TH		07/11/03	07/21/03	MCM	Thorium, Isotopic in Soil
				7529-006	U_T		06/19/03	07/21/03	MCM	Uranium, Total in Soil

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

WORK SUMMARY, cont.

SDG 7529
 Contact Melissa C. Mannion

Client Hanford
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LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R306005-07 05/27/03 06/06/03	Duplicate (R306005-01) 216-A-10 (C3247)	F03-006	SOLID	7529-007	AM C GAM H I NI_L NP SR TC TH U U_T		07/03/03 07/10/03 06/22/03 07/03/03 07/11/03 07/04/03 07/10/03 07/02/03 07/05/03 07/11/03 07/08/03 06/19/03	07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03 07/21/03	MCM MCM MCM MCM MCM MCM MCM MCM MCM MCM MCM MCM	Americium 241 in Soil Carbon 14 in Soil Gamma Scan Tritium in Soil Iodine 129 in Soil Nickel 63 in Soil Neptunium in Soil Total Strontium in Soil Technetium 99 in Soil Thorium, Isotopic in Soil Uranium, Isotopic in Soil Uranium, Total in Soil
R306005-08 05/27/03 06/06/03	Spike (R306005-01) 216-A-10 (C3247)	F03-006	SOLID	7529-008	H		07/04/03	07/21/03	MCM	Tritium in Soil
R306005-09	Lab Control Sample	F03-006	SOLID	7529-009	PU		07/18/03	07/21/03	MCM	Plutonium, Isotopic in Solids
R306005-10	Method Blank	F03-006	SOLID	7529-010	PU		07/18/03	07/21/03	MCM	Plutonium, Isotopic in Solids
R306005-11 05/27/03 06/06/03	Duplicate (R306005-01) 216-A-10 (C3247)	F03-006	SOLID	7529-011	PU		07/19/03	07/21/03	MCM	Plutonium, Isotopic in Solids

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SAMPLE DELIVERY GROUP H2250

WORK SUMMARY, cont.

SDG 7529
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Client Hanford
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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	2			1	1	1	5	
C	F03-006	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1	7	
GAM	F03-006	Gamma Scan	GAMMA_GS	2			1	1	1	5	
H	F03-006	Tritium in Soil	906.0_H3_LSC	4			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	2			1	1	1	5	
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	UIISO_PLATE_AEA	2			1	1	1	5	
U_T	F03-006	Uranium, Total in Soil	UTOT_KPA	2			1	1	1	5	
TOTALS				42			13	13	13	1	82

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7528-006

Method Blank

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SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305191-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7528-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	N.A.			400		H
Carbon 14	14762-75-5	N.A.			50		C
Nickel 63	13981-37-8	N.A.			30		NI_L
Total Strontium	SR-RAD	N.A.			1.0		SR
Technetium 99	14133-76-7	N.A.			15		TC
Thorium 228	14274-82-9	N.A.					TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Total Uranium (ug/g)	7440-61-1	N.A.			1.0		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	N.A.			1.0		NP
Americium 241	14596-10-2	0	0.053	0.20	1.0	U	AM
Iodine 129	15046-84-1	N.A.			2.0		I
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Tin 126	15832-50-5	N.A.					GAM
Cesium 134	13967-70-9	N.A.					GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.					GAM
Radium 228	15262-20-1	N.A.					GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM
Uranium 238	U-238	N.A.					GAM

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

METHOD BLANKS

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7528-006

Method Blank

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SDG <u>7529</u>	Client/Case no <u>Hanford</u>	<u>SDG H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305191-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7528-006</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>F03-006</u>	

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

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

QC-BLANK #44884

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-006

Method Blank

METHOD BLANK

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7529-006</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.080	0.17	0.29	400	U	H
Carbon 14	14762-75-5	0.516	1.7	2.8	50	U	C
Nickel 63	13981-37-8	0	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	-0.079	0.12	0.27	1.0	U	SR
Technetium 99	14133-76-7	0.016	0.24	0.52	15	U	TC
Thorium 228	14274-82-9	0.026	0.11	0.20		U	TH
Thorium 230	14269-63-7	0.159	0.16	0.20	1.0	U	TH
Thorium 232	TH-232	0.026	0.053	0.20	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0	0.004	1.0	U	U_T
Neptunium 237	13994-20-2	0.011	0.043	0.081	1.0	U	NP
Iodine 129	15046-84-1	0.149	0.33	0.75	2.0	U	I
Potassium 40	13966-00-2	U		0.91		U	GAM
Cobalt 60	10198-40-0	U		<u>0.054</u>	0.050	U	GAM
Tin 126	15832-50-5	U		0.053		U	GAM
Cesium 134	13967-70-9	U		0.066		U	GAM
Cesium 137	10045-97-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	U		0.092		U	GAM
Radium 228	15262-20-1	U		0.33		U	GAM
Europium 152	14683-23-9	U		<u>0.12</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.14</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.082	0.10	U	GAM
Thorium 228	14274-82-9	U		0.067		U	GAM
Thorium 232	TH-232	U		0.33		U	GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		6.6		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.05</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-006

Method Blank

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SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R306005-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7529-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

QC-BLANK 44972

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-010

Method Blank

METHOD BLANK

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	<u>SDG_H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-10</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7529-010</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Plutonium 238	13981-16-3	0.042	0.084	0.32	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.084	0.32	1.0	U	PU

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

QC-BLANK 45091

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

7528-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7529</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG H2250</u> Contract <u>No. 630</u>
Lab sample id <u>R305191-05</u> Dept sample id <u>7528-005</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>F03-006</u>

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	N.A.			400		H					80-120
Carbon 14	N.A.			50		C					80-120
Nickel 63	N.A.			30		NI_L					80-120
Total Strontium	N.A.			1.0		SR					80-120
Technetium 99	N.A.			15		TC					80-120
Thorium 230	N.A.			1.0		TH					80-120
Total Uranium (ug/g)	N.A.			1.0		U_T					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	N.A.			1.0		NP					80-120
Americium 241	18.0	2.0	0.23	1.0	AM		19.0	0.76	95	82-118	80-120
Iodine 129	N.A.			2.0		I					80-120
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

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

QC-LCS #44883

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

7529-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7529</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG H2250</u> Contract No. <u>630</u>
Lab sample id <u>R306005-05</u> Dept sample id <u>7529-005</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>F03-006</u>

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	13.4	0.41	0.28	400		H	13.8	0.55	97	84-116	80-120
Carbon 14	1860	19	4.3	50		C	1940	78	96	84-116	80-120
Nickel 63	256	5.3	2.3	30		NI_L	274	11	93	84-116	80-120
Total Strontium	22.4	0.98	0.33	1.0		SR	22.0	0.88	102	82-118	80-120
Technetium 99	120	1.9	0.35	15		TC	120	4.8	100	84-116	80-120
Thorium 230	39.8	3.5	0.26	1.0		TH	44.8	1.8	89	85-115	80-120
Total Uranium (ug/g)	18.2	2.1	0.037	1.0		U_T	18.1	0.72	101	77-123	80-120
Neptunium 237	19.1	2.3	0.18	1.0		NP	21.8	0.87	88	82-118	80-120
Iodine 129	138	1.4	1.4	2.0		I	127	5.1	109	83-117	80-120
Cobalt 60	6.48	0.34	<u>0.20</u>	0.050		GAM	6.64	0.27	98	76-124	80-120
Cesium 137	6.76	0.29	<u>0.21</u>	0.10		GAM	6.54	0.26	103	75-125	80-120

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

QC-LCS 44971

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-009

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-09</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7529-009</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

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	25.7	3.2	0.33	1.0		PU	24.4	0.98	105	78-122	80-120
Plutonium 239/240	26.2	3.3	0.33	1.0		PU	26.4	1.1	99	79-121	80-120

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

QC-LCS 45090

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

7529-007

B17122

DUPLICATE

SDG <u>7529</u>		Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	Client sample id <u>B17122</u>	
Lab sample id <u>R306005-07</u>	Lab sample id <u>R306005-01</u>	Location/Matrix <u>216-A-10 (C3247)</u>	<u>SOLID</u>
Dept sample id <u>7529-007</u>	Dept sample id <u>7529-001</u>	Collected/Weight <u>05/27/03 11:10 167.6 g</u>	
	Received <u>06/06/03</u>	Custody/SAF No <u>F03-006-107</u>	<u>F03-006</u>
% solids <u>89.0</u>	% solids <u>89.0</u>		

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	PROT
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST		pCi/g	(COUNT)	pCi/g	FIERS	%	TOT
Tritium	221	2.2	0.42	400	H	211	2.1	0.40		5	21	
Carbon 14	8.74	1.8	2.7	50	C	7.50	1.7	2.5		15	50	
Nickel 63	0.597	2.9	4.9	30	U	NI_L	-1.00	3.1	5.2	U	-	
Total Strontium	2.90	0.88	1.2	1.0	SR	2.91	0.92	1.3		0	69	
Technetium 99	0.166	0.22	0.55	15	U	TC	0.298	0.17	0.53	U	-	
Thorium 228	0.779	0.39	0.50		TH	2.11	0.91	0.85		92	104	
Thorium 230	0.389	0.39	0.50	1.0	U	TH	1.10	0.67	0.84		96	157
Thorium 232	0.713	0.39	0.50	1.0	TH	0.881	0.67	0.84		21	146	
Total Uranium (ug/g)	0.542	0.062	0.004	1.0	U_T	0.568	0.065	0.004		5	31	
Uranium 233/234	0.564	0.34	0.43	1.0	U	0.372	0.32	0.41	U	41	150	
Uranium 235	0.068	0.14	0.52	1.0	U	0	0.13	0.49	U	-		
Uranium 238	0.620	0.34	0.43	1.0	U	0.479	0.32	0.41		26	128	
Neptunium 237	0	0.081	0.31	1.0	U	NP	0	0.58	0.87	U	-	
Americium 241	53.2	6.8	1.1	1.0	AM	57.3	6.3	0.86		7	27	
Iodine 129	37.3	0.82	1.1	2.0	I	38.8	0.83	1.0		4	22	
Potassium 40	17.4	9.0	1.4		GAM	19.2	2.5	1.2		10	83	
Cobalt 60	U		0.14	0.050	U	GAM	U	0.16	U	-		
Tin 126	U		0.69		U	GAM	U	1.5	U	-		
Cesium 134	U		0.24		U	GAM	U	0.27	U	-		
Cesium 137	2840	4.0	0.72	0.10		GAM	2950	6.0	1.9		4	32
Radium 226	U		1.1		U	GAM	U	2.5	U	-		
Radium 228	1.75	1.1	0.88			GAM	1.27	0.89	0.99		32	144
Europium 152	U		2.8	0.10	U	GAM	U	4.6	U	-		
Europium 154	U		0.42	0.10	U	GAM	U	0.56	U	-		
Europium 155	U		1.4	0.10	U	GAM	U	2.7	U	-		
Thorium 228	U		1.2		U	GAM	U	1.9	U	-		
Thorium 232	1.75	1.1	0.88			GAM	1.27	0.89	0.99		32	144
Uranium 235	U		2.3		U	GAM	U	4.6	U	-		

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

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-007

817122

DUPLICATE, cont.

SDG <u>7529</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R306005-07</u> Dept sample id <u>7529-007</u> % solids <u>89.0</u>	ORIGINAL Lab sample id <u>R306005-01</u> Dept sample id <u>7529-001</u> Received <u>06/06/03</u> % solids <u>89.0</u>	Client/Case no <u>Hanford</u> SDG <u>H2250</u> Contract No. <u>630</u> Client sample id <u>B17122</u> Location/Matrix <u>216-A-10 (C3247)</u> SOLID Collected/Weight <u>05/27/03 11:10</u> <u>167.6 g</u> Custody/SAF No <u>F03-006-107</u> <u>F03-006</u>
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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		19		U	GAM	U		24	U	-		
Americium 241	58.6	0.57	0.70			GAM	63.9	3.0	3.8		9	33	

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

QC-DUP#1 44973

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND
 SAMPLE DELIVERY GROUP H2250

7529-011

B17122

DUPLICATE

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R306005-11</u>	Lab sample id <u>R306005-01</u>	Client sample id <u>B17122</u>
Dept sample id <u>7529-011</u>	Dept sample id <u>7529-001</u>	Location/Matrix <u>216-A-10 (C3247)</u>
	Received <u>06/06/03</u>	<u>SOLID</u>
% solids <u>89.0</u>	% solids <u>89.0</u>	Collected/Weight <u>05/27/03 11:10 167.6 g</u>
		Custody/SAF No <u>F03-006-107 F03-006</u>

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	0.216	0.16	0.22	1.0	U	PU	0.073	0.073	0.14	U	-		
Plutonium 239/240	5.38	0.68	0.22	1.0		PU	1.40	0.33	0.14		<u>117</u>	<u>36</u>	

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-008

817122

MATRIX SPIKE

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R306005-08</u>	Lab sample id <u>R306005-01</u>	Client sample id <u>B17122</u>
Dept sample id <u>7529-008</u>	Dept sample id <u>7529-001</u>	Location/Matrix <u>216-A-10 (C3247)</u> <u>SOLID</u>
	Received <u>06/06/03</u>	Collected/Weight <u>05/27/03 11:10</u> <u>167.6 g</u>
% solids <u>89.0</u>	% solids <u>89.0</u>	Custody/SAF No <u>F03-006-107</u> <u>F03-006</u>

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 % (TOTAL)	LMTS LIMITS	PROTOCOL LIMITS
Tritium	254	2.6	0.45	400	X H	56.0	2.2	211	2.1	77	11-189	60-140

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

QC-MS#1 44974

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-001

B17122

DATA SHEET

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	<u>SDG H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-01</u>	Client sample id <u>B17122</u>	
Dept sample id <u>7529-001</u>	Location/Matrix <u>216-A-10 (C3247)</u>	<u>SOLID</u>
Received <u>06/06/03</u>	Collected/Weight <u>05/27/03 11:10</u>	<u>167.6 g</u>
% solids <u>89.0</u>	Custody/SAF No <u>F03-006-107</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	211	2.1	0.40	400		H
Carbon 14	14762-75-5	7.50	1.7	2.5	50		C
Nickel 63	13981-37-8	-1.00	3.1	5.2	30	U	NI_L
Total Strontium	SR-RAD	2.91	0.92	<u>1.3</u>	1.0		SR
Technetium 99	14133-76-7	0.298	0.17	0.53	15	U	TC
Thorium 228	14274-82-9	2.11	0.91	0.85			TH
Thorium 230	14269-63-7	1.10	0.67	0.84	1.0		TH
Thorium 232	TH-232	0.881	0.67	0.84	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.568	0.065	0.004	1.0		U_T
Uranium 233/234	U-233/234	0.372	0.32	0.41	1.0	U	U
Uranium 235	15117-96-1	0	0.13	0.49	1.0	U	U
Uranium 238	U-238	0.479	0.32	0.41	1.0		U
Neptunium 237	13994-20-2	0	0.58	0.87	1.0	U	NP
Plutonium 238	13981-16-3	0.073	0.073	0.14	1.0	U	PU
Plutonium 239/240	PU-239/240	1.40	0.33	0.14	1.0		PU
Americium 241	14596-10-2	57.3	6.3	0.86	1.0		AM
Iodine 129	15046-84-1	38.8	0.83	1.0	2.0		I
Potassium 40	13966-00-2	19.2	2.5	1.2			GAM
Cobalt 60	10198-40-0	U		<u>0.16</u>	0.050	U	GAM
Tin 126	15832-50-5	U		1.5		U	GAM
Cesium 134	13967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	2950	6.0	<u>1.9</u>	0.10		GAM
Radium 226	13982-63-3	U		2.5		U	GAM
Radium 228	15262-20-1	1.27	0.89	0.99			GAM
Europium 152	14683-23-9	U		<u>4.6</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.56</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>2.7</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		1.9		U	GAM

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

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-001

B17122

DATA SHEET, cont

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-01</u>	Client sample id <u>B17122</u>	
Dept sample id <u>7529-001</u>	Location/Matrix <u>216-A-10 (C3247)</u> <u>SOLID</u>	
Received <u>06/06/03</u>	Collected/Weight <u>05/27/03 11:10</u> <u>167.6 g</u>	
% solids <u>89.0</u>	Custody/SAF No <u>F03-006-107</u> <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	1.27	0.89	0.99			GAM
Uranium 235	15117-96-1	U		4.6		U	GAM
Uranium 238	U-238	U		24		U	GAM
Americium 241	14596-10-2	63.9	3.0	3.8			GAM

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-002

B171B8

DATA SHEET

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-02</u>	Client sample id <u>B171B8</u>	
Dept sample id <u>7529-002</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/06/03</u>	Collected/Weight <u>05/29/03 12:50</u>	<u>184.7 g</u>
% solids <u>95.0</u>	Custody/SAF No <u>F03-006-134</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	8.28	0.33	0.27	400		H
Carbon 14	14762-75-5	-0.020	1.6	2.7	50	U	C
Nickel 63	13981-37-8	0.061	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.125	0.15	0.28	1.0	U	SR
Technetium 99	14133-76-7	0.123	0.29	0.57	15	U	TC
Thorium 228	14274-82-9	0.584	0.27	0.20			TH
Thorium 230	14269-63-7	1.19	0.38	0.20	1.0		TH
Thorium 232	TH-232	0.716	0.27	0.20	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.445	0.053	0.004	1.0		U_T
Uranium 233/234	U-233/234	0.605	0.23	0.17	1.0		U
Uranium 235	15117-96-1	0.027	0.054	0.21	1.0	U	U
Uranium 238	U-238	0.628	0.23	0.17	1.0		U
Neptunium 237	13994-20-2	0.043	0.086	0.13	1.0	U	NP
Plutonium 238	13981-16-3	0	0.076	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.076	0.29	1.0	U	PU
Americium 241	14596-10-2	0.047	0.095	0.18	1.0	U	AM
Iodine 129	15046-84-1	-0.051	0.46	1.0	2.0	U	I
Potassium 40	13966-00-2	14.2	8.0	1.4			GAM
Cobalt 60	10198-40-0	U		<u>0.14</u>	0.050	U	GAM
Tin 126	15832-50-5	0.742	0.15	0.17			GAM
Cesium 134	13967-70-9	U		0.23		U	GAM
Cesium 137	10045-97-3	U		<u>0.14</u>	0.10	U	GAM
Radium 226	13982-63-3	0.708	0.27	0.24			GAM
Radium 228	15262-20-1	U		1.1		U	GAM
Europium 152	14683-23-9	U		<u>0.34</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.42</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.26</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.930	0.21	0.16			GAM

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

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-002

B171B8

DATA SHEET, cont

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-02</u>	Client sample id <u>B171B8</u>	
Dept sample id <u>7529-002</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/06/03</u>	Collected/Weight <u>05/29/03 12:50</u>	<u>184.7 g</u>
% solids <u>95.0</u>	Custody/SAF No <u>F03-006-134</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	U		1.1		U	GAM
Uranium 235	15117-96-1	U		0.42		U	GAM
Uranium 238	U-238	U		17		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-003

B171C1-B

DATA SHEET

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306005-03</u>	Client sample id <u>B171C1-B</u>	
Dept sample id <u>7529-003</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/06/03</u>	Collected/Weight <u>06/03/03 10:15</u>	<u>152.4 g</u>
% solids <u>98.0</u>	Custody/SAF No <u>F03-006-179</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	4.95	0.28	0.27	400		H
Carbon 14	14762-75-5	1.46	1.6	2.6	50	U	C
Nickel 63	13981-37-8	-0.077	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	31.8	1.2	0.32	1.0		SR
Technetium 99	14133-76-7	0.123	0.15	0.55	15	U	TC
Thorium 228	14274-82-9	0.517	0.26	0.20			TH
Thorium 230	14269-63-7	0.929	0.32	0.25	1.0		TH
Thorium 232	TH-232	0.671	0.26	0.20	1.0		TH
Neptunium 237	13994-20-2	0.216	<u>0.29</u>	0.22	1.0	U	NP
Iodine 129	15046-84-1	-0.361	0.53	1.2	2.0	U	I

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2250

7529-004

B17218-B

DATA SHEET

SDG <u>7529</u>	Client/Case no <u>Hanford</u>	SDG <u>H2250</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R306005-04</u>	Client sample id <u>B17218-B</u>	
Dept sample id <u>7529-004</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/06/03</u>	Collected/Weight <u>06/03/03 10:15</u>	<u>148.2 g</u>
% solids <u>98.1</u>	Custody/SAF No <u>F03-006-179</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	5.31	0.28	0.26	400		H
Carbon 14	14762-75-5	2.35	1.6	2.6	50	U	C
Nickel 63	13981-37-8	0.078	1.3	2.1	30	U	NI_L
Total Strontium	SR-RAD	31.2	1.2	0.31	1.0		SR
Technetium 99	14133-76-7	0.094	0.23	0.40	15	U	TC
Thorium 228	14274-82-9	0.490	0.22	0.21			TH
Thorium 230	14269-63-7	0.789	0.33	0.21	1.0		TH
Thorium 232	TH-232	0.544	0.22	0.21	1.0		TH
Neptunium 237	13994-20-2	0.056	0.11	0.17	1.0	U	NP
Iodine 129	15046-84-1	0.362	0.43	0.96	2.0	U	I

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

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/21/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test AM Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2250

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
 ALPHA SPECTROSCOPY

RESULTS

LAB	RAW	SUF-		Americium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241
Preparation batch 7071-037				
R305191-05		7528-005	LCS (QC ID=44883)	ok
R305191-06		7528-006	BLK (QC ID=44884)	U
R306005-01		7529-001	B17122	57.3
R306005-02		7529-002	B17188	U
R306005-07		7529-007	Duplicate (R306005-01)	ok

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037													
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
R306005-01		B17122	0.86	<u>0.100</u>			66	178	36	07/02/03	07/02	07/02	SS-051
R306005-02		B17188	0.18	0.500			65	179	34	07/02/03	07/02	07/02	SS-057
R306005-07		Duplicate (R306005-01) (QC ID=44973)	<u>1.1</u>	<u>0.100</u>			81	110	37	07/02/03	07/03	07/03	SS-042

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
CP-060		Soil Preparation, rev 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 <u>0.51</u> ± <u>0.87</u>
FOR 5 SAMPLES	YIELD <u>70</u> ± <u>15</u>

METHOD SUMMARIES

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Lab id EBRLNE
 Protocol Hanford
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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

Test NP Matrix SOLID
SDG 7529
Contact Melissa C. Mannion

LAB METHOD SUMMARY
NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2250

RESULTS

LAB	RAW	SUF-		Neptunium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	237
Preparation batch 7071-044				
R306005-01		7529-001	B17122	U
R306005-02		7529-002	B171B8	U
R306005-03		7529-003	B171C1-B	U
R306005-04		7529-004	B17218-B	U
R306005-05		7529-005	LCS (QC ID=44971)	ok
R306005-06		7529-006	BLK (QC ID=44972)	U
R306005-07		7529-007	Duplicate (R306005-01)	- U

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 044															
R306005-01		B17122	0.87	<u>0.100</u>			42			103		44	07/09/03	07/10	SS-028
R306005-02		B171B8	0.13	0.500			58			103		42	07/09/03	07/10	SS-029
R306005-03		B171C1-B	0.22	0.500			37			103		37	07/09/03	07/10	SS-035
R306005-04		B17218-B	0.17	0.500			46			103		37	07/09/03	07/10	SS-036
R306005-05		LCS (QC ID=44971)	0.18	0.500			42			103			07/09/03	07/10	SS-042
R306005-06		BLK (QC ID=44972)	0.081	0.500			42			609			07/09/03	07/10	SS-035
R306005-07		Duplicate (R306005-01)	0.31	<u>0.100</u>			54			609		44	07/09/03	07/10	SS-036
		(QC ID=44973)													

Nominal values and limits from method 1.0 0.500 20-105 100 180

METHOD SUMMARIES

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/21/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test NP Matrix SOLID
SDG 7529
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2250

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	0.28 ± 0.54
FOR 7 SAMPLES	YIELD	46 ± 15

Lab id EBRLE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/21/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7529
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2250

RESULTS

LAB	RAW	SUF-		Plutonium	Plutonium	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240
Preparation batch 7071-044						
R306005-01	A1		7529-001	B17122	U	1.40
R306005-02	A1		7529-002	B171B8	U	U
R306005-09			7529-009	LCS (QC ID=45090)	ok	ok
R306005-10			7529-010	BLK (QC ID=45091)	U	U
R306005-11			7529-011	Duplicate (R306005-01)	- U	<u>OUT</u>

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

METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-044 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 044														
R306005-01	A1		B17122	0.14	<u>0.100</u>			85		879			53 07/16/03	07/19 SS-055
R306005-02	A1		B171B8	0.29	0.500			67		101			50 07/16/03	07/18 SS-029
R306005-09			LCS (QC ID=45090)	0.33	0.500			75		101			07/16/03	07/18 SS-038
R306005-10			BLK (QC ID=45091)	0.32	0.500			62		102			07/16/03	07/18 SS-042
R306005-11			Duplicate (R306005-01)	0.22	<u>0.100</u>			76		880			53 07/16/03	07/19 SS-056
			(QC ID=45092)											

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 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	<u>0.26</u> ± <u>0.16</u>
FOR 5 SAMPLES	YIELD	<u>73</u> ± <u>18</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test TH Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 7071-044

R306005-01	R1	7529-001	B17122	1.10
R306005-02		7529-002	B171B8	1.19
R306005-03		7529-003	B171C1-B	0.929
R306005-04		7529-004	B17218-B	0.789
R306005-05		7529-005	LCS (QC ID=44971)	ok
R306005-06		7529-006	BLK (QC ID=44972)	U
R306005-07		7529-007	Duplicate (R306005-01)	ok U

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

METHOD PERFORMANCE

LAB RAW SUF- MAX MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7071-044 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 044

R306005-01	R1	B17122	0.84	0.100	73	157	52	07/11/03	07/18	SS-028
R306005-02		B171B8	0.20	0.250	89	217	43	07/11/03	07/11	SS-029
R306005-03		B171C1-B	0.25	0.250	98	216	38	07/11/03	07/11	SS-035
R306005-04		B17218-B	0.21	0.250	90	217	38	07/11/03	07/11	SS-036
R306005-05		LCS (QC ID=44971)	0.26	0.250	92	217		07/11/03	07/11	SS-042
R306005-06		BLK (QC ID=44972)	0.20	0.250	96	218		07/11/03	07/11	SS-056
R306005-07		Duplicate (R306005-01) (QC ID=44973)	0.50	0.100	104	218	45	07/11/03	07/11	SS-057

Nominal values and limits from method 1.0 0.250 20-105 150 180

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

Test IH Matrix SOLID
SDG 7529
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.
THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG_H2250

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 \pm 2 SD MDA 0.35 \pm 0.48
FOR 7 SAMPLES YIELD 92 \pm 19

Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test U Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB	RAW	SUF-	PLANCHET	CLIENT SAMPLE ID	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)						
					233/234	235	238	1+3	2σ	2+3	2σ			
Preparation batch 7071-037														
R305191-05			7528-005	LCS (QC ID=44883)	ok	ok	ok							
R305191-06			7528-006	BLK (QC ID=44884)	U	U	U							
R306005-01			7529-001	B17122	U	U	0.479	78	85	0	27			
R306005-02			7529-002	B171B8	0.605	U	0.628	96	51	4	9			
R306005-07			7529-007	Duplicate (R306005-01)	ok	-	U	ok	91	74	11	23		
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	88			5		

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-037 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 037													
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
R306005-01		B17122	0.49	<u>0.200</u>			101	129	42			07/08/03	07/08 SS-062
R306005-02		B171B8	0.21	0.500			98	129	40			07/08/03	07/08 SS-065
R306005-07		Duplicate (R306005-01) (QC ID=44973)	0.52	<u>0.200</u>			97	129	42			07/08/03	07/08 SS-066
Nominal values and limits from method			1.0	0.500			20-105	100	100			180	

PROCEDURES	REFERENCE	UIISO_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 <u>0.47</u> ± <u>0.61</u>
FOR 5 SAMPLES	YIELD <u>96</u> ± <u>12</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Test SR Matrix SOLID
SDG 7529
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2250

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7071-044				
R306005-01		7529-001	B17122	2.91
R306005-02		7529-002	B171B8	U
R306005-03		7529-003	B171C1-B	31.8
R306005-04		7529-004	B17218-B	31.2
R306005-05		7529-005	LCS (QC ID=44971)	ok
R306005-06		7529-006	BLK (QC ID=44972)	U
R306005-07		7529-007	Duplicate (R306005-01)	ok

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-044 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 044													
R306005-01		B17122	1.3	0.200			87	100				36 07/02/03	07/02 GRB-222
R306005-02		B171B8	0.28	1.00			91	100				34 07/02/03	07/02 GRB-221
R306005-03		B171C1-B	0.32	1.00			96	78				29 07/02/03	07/02 GRB-223
R306005-04		B17218-B	0.31	1.00			93	78				29 07/02/03	07/02 GRB-224
R306005-05		LCS (QC ID=44971)	0.33	1.00			79	100				07/02/03	07/02 GRB-223
R306005-06		BLK (QC ID=44972)	0.27	1.00			80	100				07/02/03	07/02 GRB-224
R306005-07		Duplicate (R306005-01)	1.2	0.200			84	100				36 07/02/03	07/02 GRB-202
		(QC ID=44973)											

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	0.57 ± 0.93
FOR 7 SAMPLES	YIELD	87 ± 13

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test IC Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB	RAW	SUF-	Technetium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 7071-044				
R306005-01		7529-001	B17122	U
R306005-02		7529-002	B171B8	U
R306005-03		7529-003	B171C1-B	U
R306005-04		7529-004	B17218-B	U
R306005-05		7529-005	LCS (QC ID=44971)	ok
R306005-06		7529-006	BLK (QC ID=44972)	U
R306005-07		7529-007	Duplicate (R306005-01)	- U

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 044															
R306005-01		B17122	0.53	1.03			90		50		40	07/01/03	07/06	GRB-220	
R306005-02		B171B8	0.57	1.03			88		50		36	07/01/03	07/04	GRB-230	
R306005-03		B171C1-B	0.55	1.02			91		50		32	07/01/03	07/05	GRB-221	
R306005-04		B17218-B	0.40	1.02			87		100		31	07/01/03	07/04	GRB-219	
R306005-05		LCS (QC ID=44971)	0.35	1.00			94		100			07/01/03	07/04	GRB-220	
R306005-06		BLK (QC ID=44972)	0.52	1.00			96		50			07/01/03	07/04	GRB-221	
R306005-07		Duplicate (R306005-01)	0.55	1.03			88		50		39	07/01/03	07/05	GRB-224	
		(QC ID=44973)													

Nominal values and limits from method 15 1.00 20-105 50 180

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2250

Test IC Matrix SOLID
SDG 7529
Contact Melissa C. Mannion

LAB METHOD SUMMARY, cont.
TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2250

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	<u>0.50</u> ± <u>0.17</u>
FOR 7 SAMPLES	YIELD	<u>91</u> ± <u>7</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test GAM Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 7071-044

R306005-01	7529-001	B17122	U	2950
R306005-02	7529-002	B171B8	U	U
R306005-05	7529-005	LCS (QC ID=44971)	ok	ok
R306005-06	7529-006	BLK (QC ID=44972)	U	U
R306005-07	7529-007	Duplicate (R306005-01)	- U	ok

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
 200-PW-2/200-PW-4 OJ - Borehole Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7071-044 2σ prep error 15.0 % Reference Lab Notebook 7071 pg. 044

R306005-01	B17122	<u>13</u>	39.0	437	26	06/17/03	06/22	PD,03,00
R306005-02	B171B8	<u>1.1</u>	45.1	440	24	06/17/03	06/22	PD,07,00
R306005-05	LCS (QC ID=44971)	<u>0.20</u>	39.0	658		06/17/03	06/22	PD,03,00
R306005-06	BLK (QC ID=44972)	<u>0.39</u>	39.0	658		06/17/03	06/22	PD,04,00
R306005-07	Duplicate (R306005-01) (QC ID=44973)	<u>5.4</u>	39.0	651	26	06/17/03	06/22	PD,07,00

Nominal values and limits from method 0.050 39.0 100 180

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

AVERAGES ± 2 SD MDA 4.0 ± 11
 FOR 5 SAMPLES YIELD _____ ± _____

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test I Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129
Preparation batch 7071-044				
R306005-01		7529-001	B17122	38.8
R306005-02		7529-002	B171B8	U
R306005-03		7529-003	B171C1-B	U
R306005-04		7529-004	B17218-B	U
R306005-05		7529-005	LCS (QC ID=44971)	ok
R306005-06		7529-006	BLK (QC ID=44972)	U
R306005-07		7529-007	Duplicate (R306005-01)	ok

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 044															
R306005-01		B17122	1.0	1.00			63					42	07/08/03	07/08	XSPEC-004
R306005-02		B171B8	1.0	1.00			72					41	07/08/03	07/09	XSPEC-004
R306005-03		B171C1-B	1.2	1.00			59					36	07/08/03	07/09	XSPEC-004
R306005-04		B17218-B	0.96	1.04			60					37	07/08/03	07/10	XSPEC-004
R306005-05		LCS (QC ID=44971)	1.4	1.00			92						07/08/03	07/10	XSPEC-004
R306005-06		BLK (QC ID=44972)	0.75	1.00			91						07/08/03	07/11	XSPEC-004
R306005-07		Duplicate (R306005-01) (QC ID=44973)	1.1	1.00			53					45	07/08/03	07/11	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 MDA 1.1 ± 0.41
 FOR 7 SAMPLES YIELD 70 ± 31

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY (KPA)

Test U_I Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB	RAW	SUF-		Total	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	Uranium
Preparation batch 7071-044					
R306005-01			7529-001	B17122	0.568
R306005-02			7529-002	B171B8	0.445
R306005-05			7529-005	LCS (QC ID=44971)	ok
R306005-06			7529-006	BLK (QC ID=44972)	U
R306005-07			7529-007	Duplicate (R306005-01)	ok
Nominal values and limits from method					RDLs (ug/g) 1.0
200-PW-2/200-PW-4 OU - Borehole Soil					

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	ug/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044					2σ prep error 9.0 % Reference Lab Notebook 7071 pg. 044												
R306005-01			B17122		0.004	0.100								23	06/19/03	06/19	KPA-001
R306005-02			B171B8		0.004	0.100								21	06/19/03	06/19	KPA-001
R306005-05			LCS (QC ID=44971)		0.037	0.100									06/19/03	06/19	KPA-001
R306005-06			BLK (QC ID=44972)		0.004	0.100									06/19/03	06/19	KPA-001
R306005-07			Duplicate (R306005-01)		0.004	0.100								23	06/19/03	06/19	KPA-001
					(QC ID=44973)												
Nominal values and limits from method					1.0	0.100											180

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 <u>0.011 ± 0.030</u>
FOR 5 SAMPLES	YIELD _____ ± _____

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

Test C Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

LAB METHOD SUMMARY
CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7071-044				
R306005-01	7529-001		B17122	7.50
R306005-02	7529-002		B171B8	U
R306005-03	7529-003		B171C1-B	U
R306005-04	7529-004		B17218-B	U
R306005-05	7529-005		LCS (QC ID=44971)	ok
R306005-06	7529-006		BLK (QC ID=44972)	U
R306005-07	7529-007		Duplicate (R306005-01)	ok

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 044												
R306005-01		B17122	2.5	0.360			100	100	43	07/07/03	07/09	LSC-007			
R306005-02		B171B8	2.7	0.329			100	100	42	07/07/03	07/10	LSC-007			
R306005-03		B171C1-B	2.6	0.355			100	100	37	07/07/03	07/10	LSC-007			
R306005-04		B17218-B	2.6	0.339			100	100	37	07/07/03	07/10	LSC-007			
R306005-05		LCS (QC ID=44971)	4.3	0.329			100	<u>43</u>		07/07/03	07/10	LSC-007			
R306005-06		BLK (QC ID=44972)	2.8	0.329			100	100		07/07/03	07/09	LSC-007			
R306005-07		Duplicate (R306005-01)	2.7	0.337			100	100	44	07/07/03	07/10	LSC-007			
		(QC ID=44973)													

Nominal values and limits from method 50 0.329 50 180

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

AVERAGES ± 2 SD MDA 2.9 ± 1.3
 FOR 7 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2250

LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
 SDG 7529
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2250

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7071-044					
R306005-01	7529-001		B17122	211	
R306005-02	7529-002		B17188	8.28	
R306005-03	7529-003		B171C1-B	4.95	
R306005-04	7529-004		B17218-B	5.31	
R306005-05	7529-005		LCS (QC ID=44971)	ok	
R306005-06	7529-006		BLK (QC ID=44972)	U	
R306005-07	7529-007		Duplicate (R306005-01)	ok	
R306005-08	7529-008		Spike (R306005-01)	ok	X

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 044															
R306005-01		B17122	0.40	20.6			33		60			37	06/27/03	07/03	LSC-004
R306005-02		B17188	0.27	21.6			33		120			35	06/27/03	07/03	LSC-004
R306005-03		B171C1-B	0.27	20.7			34		120			30	06/27/03	07/03	LSC-004
R306005-04		B17218-B	0.26	21.1			34		120			30	06/27/03	07/03	LSC-004
R306005-05		LCS (QC ID=44971)	0.28	20.0			33		120				06/27/03	07/03	LSC-004
R306005-06		BLK (QC ID=44972)	0.29	20.0			33		120				06/27/03	07/03	LSC-004
R306005-07		Duplicate (R306005-01)	0.42	20.4			32		61			37	06/27/03	07/03	LSC-004
		(QC ID=44973)													
R306005-08		Spike (R306005-01)	0.45	20.9			33		51			38	06/27/03	07/04	LSC-004
		(QC ID=44974)													

Nominal values and limits from method 400 20.0 25 180

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LAB METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

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SDG 7529
Contact Melissa C. Mannion

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

AVERAGES \pm 2 SD MDA 0.33 \pm 0.16
FOR 8 SAMPLES YIELD 33 \pm 1

METHOD SUMMARIES

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LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
 SDG 7529
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RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63
Preparation batch 7071-044				
R306005-01		7529-001	B17122	U
R306005-02		7529-002	B171B8	U
R306005-03		7529-003	B171C1-B	U
R306005-04		7529-004	B17218-B	U
R306005-05		7529-005	LCS (QC ID=44971)	ok
R306005-06		7529-006	BLK (QC ID=44972)	U
R306005-07		7529-007	Duplicate (R306005-01)	- U

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

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-044 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 044															
R306005-01		B17122	5.2	0.200			89	100				43	07/01/03	07/09	LSC-004
R306005-02		B171B8	2.2	0.500			81	100				41	07/01/03	07/09	LSC-004
R306005-03		B171C1-B	2.1	0.500			87	100				36	07/01/03	07/09	LSC-004
R306005-04		B17218-B	2.1	0.500			87	100				36	07/01/03	07/09	LSC-004
R306005-05		LCS (QC ID=44971)	2.3	0.500			96	66					07/01/03	07/04	LSC-004
R306005-06		BLK (QC ID=44972)	1.9	0.500			96	100					07/01/03	07/04	LSC-004
R306005-07		Duplicate (R306005-01)	4.9	0.200			93	100				38	07/01/03	07/04	LSC-004
		(QC ID=44973)													

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	<u>3.0</u>	±	<u>2.9</u>
FOR 7 SAMPLES	YIELD	<u>90</u>	±	<u>11</u>

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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.

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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.

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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.

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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).

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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.

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- * 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.

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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.

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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.

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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.

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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

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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.

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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'

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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.
- * Preparation 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.

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- * 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

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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.

REPORT GUIDES

Page 15

SUMMARY DATA SECTION

Page 59

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/21/03

FH-Central Plateau Project				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST																																					
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		H2250 (7529)		SAF No. F03-006 A		Air Quality <input type="checkbox"/>																															
Ice Chest No. ERC 02003				Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express																																	
Shipped To EBERLINE SERVICES (Formerly TMA)				Offsite Property No. RSR 107189				Bill of Lading/Air Bill No. N/A																																	
POSSIBLE SAMPLE HAZARDS/REMARKS radiological field: B7110 B7123; B7122 N/A				TMS 5-27-03 B7123; B7122 5-27-03 B7124																																					
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	60mL	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.		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																													
B7110				SOIL				5-27-03				1030																													
B7123				SOIL				5-27-03				1030																													
B7122				SOIL				5-27-03				1110																													
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS								Matrix *																									
Relinquished By/Removed From M. Wilson				Date/Time 5-27-03 1415				Received By/Stored In ERC				Date/Time 5-27-03 1415				<p>** 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.</p> <p>(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-G</p> <p>(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 - 2421 - (CV)</p> <p>(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3, pH (Soil) - 9045; Total Cyanide - 0040</p> <p>(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</p> <p>(6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237</p>				S-Soil		SE-Sediment		SO-Solid		SL-Sludge		W-Water		D-Dry		A-Air		DS-Dry Solid		L-Liquid		V-Vegetation		X-Other	
Relinquished By/Removed From R. G. G. R. G. G.				Date/Time 5-27-03 1415				Received By/Stored In RS 3228				Date/Time 5-27-03 1415																													
Relinquished By/Removed From RS 3228				Date/Time 5-30-03 1000				Received By/Stored In R. G. G. R. G. G.				Date/Time 5-30-03 1000																													
Relinquished By/Removed From R. G. G. R. G. G.				Date/Time 5-27-03 1000				Received By/Stored In F. E. X.				Date/Time 5-27-03 1000																													
Relinquished By/Removed From F. E. X.				Date/Time 5-27-03 1000				Received By/Stored In M. J.				Date/Time 5-27-03 1000																													
Relinquished By/Removed From				Date/Time				Received By/Stored In				Date/Time																													
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					F03-006-134		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-B-12 (C3246); (14.5'-17') H2250 (7529)			SAF No. F03-006		Air Quality <input type="checkbox"/>																	
Ice Chest No. SEE OSL		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express																		
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. A030270			Bill of Lading/Air Bill No. SEE OSL																			
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive Tie To B171N9 Special Handling and/or Storage None				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None														
				Type of Container	aG	aG	aG	aG	aG	aG														
				No. of Container(s)	1	1	1	1	1	1														
				Volume	60mL	125mL	60mL	60mL	60mL	60mL														
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions	See item (4) in Special Instructions	Tritium - H3															
Sample No.	Matrix *	Sample Date	Sample Time																					
B171B8	SOIL	5-29-03	1250					X	X	X														
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *												
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** 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. (4) Alcohols, Glycols, & Ketones - 8015 (1-Dibutyl, 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) 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 (4) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237				S=Soil SE=Softwood SO=Solid SL=Liquid DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other												
R. F. Hulstrom		5-29-03		R. F. Hulstrom		5-29-03																		
R. F. Hulstrom		5-29-03		LB 3728		5-29-03																		
ID 3728		6-3-03		R. F. Hulstrom		6-3-03																		
R. F. Hulstrom		6-3-03		Fed Ex		6-4-03																		
PRO EX																								
LABORATORY SECTION	Received By	Title	Date/Time																					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time																					

FLUOR Hanford Inc.		CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-179		Page 1 of 1			
Collector Johansen/Pope/Pfister <i>Mamas</i>		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-B-12 (C3246)		<i>H2250 (7529)</i>		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A							
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Potentially Radioactive: SEE Note Below</i>				Preservation		None		None			
Special Handling and/or Storage <i>None</i>				Type of Container		aG		aG			
				No. of Container(s)		1		1			
				Volume		60mL		60mL			
SAMPLE ANALYSIS				See item (1) in Special Instructions.		Tritium - FB					
Sample No.		Matrix *	Sample Date	Sample Time							
B171C1-B		SOIL	6-3-03	1015	X	X					
B17218-B		SOIL	6-3-03	1015	X	X					
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From <i>R. Felder</i>		Date/Time <i>6/4/03</i>		Received By/Stored In <i>Mamas</i>		Date/Time <i>6/4/03</i>		The lab is to achieve a detection limit of 50.0 pCi/g for C-14. Report kerosene and diesel range compounds from WTPH-D analysis. FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the rad characteristics. (1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237 <i>Note:</i> Based on Preliminary Screening Data and historical information, sample does not exceed 2000 pCi/gram			S=Soil SE=Sludge 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
Relinquished By/Removed From <i>Mamas</i>		Date/Time <i>6/4/03</i>		Received By/Stored In <i>ERC</i>		Date/Time <i>1430</i>					
Relinquished By/Removed From <i>R. Felder</i>		Date/Time <i>6/04/03</i>		Received By/Stored In <i>IA 3728</i>		Date/Time <i>6:04-03</i>					
Relinquished By/Removed From <i>IA 3728</i>		Date/Time <i>6-5-03 1000</i>		Received By/Stored In <i>R. Felder</i>		Date/Time <i>6-5-03</i>					
Relinquished By/Removed From <i>R. Felder</i>		Date/Time <i>6-5-03</i>		Received By/Stored In <i>Fed Ex</i>		Date/Time					
Relinquished By/Removed From <i>FEO EX</i>		Date/Time		Received By/Stored In <i>1000</i>		Date/Time <i>6-6-03</i>					
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						F03-006-179		Page 1 of 1	
Collector Johansen/Pope/Pfister <i>Thomas</i>			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-B-12 (C3246) <i>H2250 (7529)</i>			SAF No. F03-006		Air Quality <input type="checkbox"/>				
Ice Chest No.			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To <i>W/SCF</i> EBERLINE SERVICES (Formerly TMA) <i>BY 6/03/03</i>			Offsite Property No. N/A			Bill of Lading/Air Bill No. N/A						
POSSIBLE SAMPLE HAZARDS/REMARKS			Preservation		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None
Special Handling and/or Storage			Type of Container		aG	aG	aG	aG	aG	aG	aG	aG
			No. of Container(s)		1	1	1	3	1	1	1	1
			Volume		60mL	60mL	60mL	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.	See item (4) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time									
B17218	SOIL	6-3-03	1015						X	X	X	
B17141	SOIL	6-3-03	1015						X	X	X	
CHAIN OF POSSESSION			Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix *
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time	<p>The lab is to achieve a detection limit of 50.0 pCi/g for C-14. Report kerosene and diesel range compounds from WTRPLD analysis. FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the rad characteristics.</p> <p><i>TYD 6-3-03</i></p> <p>(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (FCL); 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) Tech-99, Strontium-89, 90 - Total Sr, Isotopic Thorium-Thorium-232, Carbon-14, Iodine-129, Nickel-63, Polonium-210</p>						S-Salt SE-Sediment SO-Solid SI-Sludge W-Water DS-Dry Solids L-Liquid V-Vegetation X-Other
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
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			F03-006-179	Page 1 of 1
Collector Johansen/Pope/Pfister <i>Thomas</i>	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-B-12 (C3246)	<i>H2250 (7529)</i>		SAF No. F03-006	Air Quality <input type="checkbox"/>	
Ice Chest No.	Field Logbook No. HNF-N-3361	COA I17504ES10		Method of Shipment Federal Express		
Shipped To <i>MD5-3-03</i> -BERLINE SERVICES (Formerly TMA) <i>WJSCF</i>	Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A				

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	2	<i>(1)</i>	1	1	1
	Volume	60mL	60mL	60mL	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.	See item (4) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3
				<i>W</i>	<i>W</i>	<i>W</i>	<i>W</i>	<i>STL</i>			
Sample No.	Matrix *	Sample Date	Sample Time								
B17218	SOIL	10-3-03	1015	X	X	X	X	X			
<i>B7111</i>	<i>SOIL</i>	<i>10-3-03</i>	<i>1015</i>	X	X	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From <i>Greg Thomas</i>	Date/Time <i>1900</i>	Received By/Stored In <i>Greg Thomas</i>	Date/Time <i>10/3/03</i>	The lab is to achieve a detection limit of 50.0 pCi/g for C-14. Report kerosene and diesel range compounds from WTPH-D analysis. FH acknowledges that holding times (less than 14 days) may not be met by the lab due to the radf characteristics.				<ul style="list-style-type: none"> S=Soil SE=Soil/Ext SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solid DL=Drum Liq T=Trace WT=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) [2-Butoxyethanol, Tributyl phosphate]; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(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)				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(5) Gamma Spectroscopy (Cesium-137; Cobalt-60; Europium-152; Europium-154; Europium-155); Gamma-Spec - Add on (Cesium-134, Radium-226, Radium-228, Th-232); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium				

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



ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

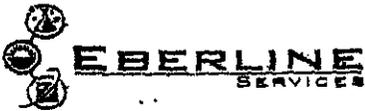
Client: FLR Date/Time received 1000 6-2-03
 CoC No. F03-006-107
 Container I.D. No. ERC-02-003 Requested TAT (Days) 45 P.O. Received Yes [] No []

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 _____ Date: _____ Time: _____

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
<u>B17122</u>	<u>150</u>						

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 106261 Calibration date 2-14-03



ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 6-4-03
 CoC No. F03-006-134
 Container I.D. No. ERC-02-107 Requested TAT (Days) 45 P.O. Received Yes [] No []

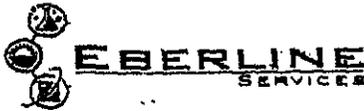
INSPECTION

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: 6-4-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
<u>B17138</u>	<u>240</u>						

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 106261 Calibration date 2-14-03



ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 6-6-03
 CoC No. F03-006-179
 Container I.D. No. GR-01-059 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

- Custody seals on shipping container intact? Yes [] No [] N/A []
- Custody seals on shipping container dated & signed? Yes [] No [] N/A []
- Custody seals on sample containers intact? Yes [] No [] N/A []
- Custody seals on sample containers dated & signed? Yes [] No [] N/A []
- Packing material is: Wet [] Dry []
- Number of samples in shipping container: 2
- Number of containers per sample: 2 (Or see CoC _____)
- Paperwork agrees with samples? Yes [] No []
- Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
- Samples are: In good condition [] Leaking [] Broken Container [] Missing []
- Samples are: Preserved [] Not preserved [] Preservative _____
- Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____

14. Received by [Signature] Date: _____ Time: _____

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
<u>B171C1-B</u>	<u>240</u>						
<u>B17218-B</u>	<u>240</u>						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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



11 July 2003

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

**Subject: Contract No. 630
Analytical Data Package**



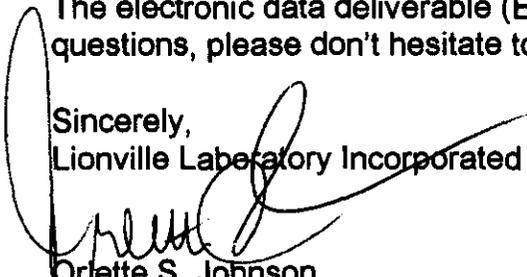
Dear Mr. Trent:

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

LvLI Batch #	0305L537
SDG #	H2250
SAF #	F03-006
Date Received	6-4-03
# Samples	3
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	X
DRO/GRO/KRO	X
Herbicides	X
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

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B17122	001	M1	S	03LVH126	05/27/03	N/A	06/10/03
B17122	001 MS	M1	S	03LVH126	05/27/03	N/A	06/10/03
B17122	001 MSD	M1	S	03LVH126	05/27/03	N/A	06/10/03

LAB QC:

VBLKWZ	MB1		S	03LVH126	N/A	N/A	06/09/03
VBLKWZ	MB1 BS		S	03LVH126	N/A	N/A	06/09/03





Client: TNU-HANFORD F03-006
LVL #: 0305L537
SDG/SAF # H2250/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-31-2003 & 06-04-2003

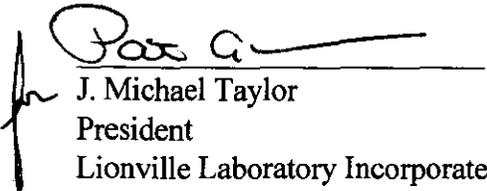
GC/MS VOLATILE

One (1) soil sample was collected on 05-27-2003.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for client specified volatile target compounds on 06-09,10-2003.

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 a sample that met LvLI's sample acceptance policy.
2. The sample was analyzed within holding time.
3. Non-target compounds were detected in the sample.
4. The sample required a medium level analysis due to high levels of non-target compounds. The forms do not reflect the correct dilution factors due to programming limitations; however, the results are correct.
5. All surrogate recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. All matrix spike recoveries were within EPA QC limits.
8. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
9. Internal standard area and retention time criteria were met.
10. A spectral search was conducted for the compound 2-Pentanone; this compound was not identified in the sample.
11. "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

07-11-03
Date

som\group\data\voa\tnu-hanford\0305-537.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 18 pages.

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.

mmz\l 0-94\gloss.bna



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.

mmz\10-94\gloss.bna



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.

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mmz\10-94\gloss.bna



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mmz\10-94\gloss.bna



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Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 07/07/03 10:56

RFW Batch Number: 03051537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1a

Sample Information	Cust ID:	B17122	B17122	B17122	VBLKWZ	VBLKWZ BS
	RFW#:	001	001 MS	001 MSD	03LVH126-MB1	03LVH126-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.82	1.82	1.82	2.00	2.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
	Level:	MED	MED	MED	MED	MED
Surrogate	Toluene-d8	86 %	80 %	83 %	86 %	84 %
Recovery	Bromofluorobenzene	92 %	88 %	92 %	94 %	95 %
	1,2-Dichloroethane-d4	84 %	81 %	86 %	89 %	90 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Chloromethane		1300 U	1300 U	1300 U	1200 U	1200 U
Bromomethane		1300 U	1300 U	1300 U	1200 U	1200 U
Vinyl Chloride		1300 U	1300 U	1300 U	1200 U	1200 U
Chloroethane		1300 U	1300 U	1300 U	1200 U	1200 U
Methylene Chloride		660 U	660 U	660 U	340 J	400 JB
Acetone		1300 U	1300 U	1300 U	1200 U	1200 U
Carbon Disulfide		660 U	660 U	660 U	620 U	620 U
1,1-Dichloroethene		660 U	81 %	79 %	620 U	84 %
1,1-Dichloroethane		660 U	660 U	660 U	620 U	620 U
1,2-Dichloroethene (total)		660 U	660 U	660 U	620 U	620 U
Chloroform		660 U	660 U	660 U	620 U	620 U
1,2-Dichloroethane		660 U	660 U	660 U	620 U	620 U
2-Butanone		1300 U	1300 U	1300 U	1200 U	1200 U
1,1,1-Trichloroethane		660 U	660 U	660 U	620 U	620 U
Carbon Tetrachloride		660 U	660 U	660 U	620 U	620 U
Bromodichloromethane		660 U	660 U	660 U	620 U	620 U
1,2-Dichloropropane		660 U	660 U	660 U	620 U	620 U
cis-1,3-Dichloropropene		660 U	660 U	660 U	620 U	620 U
Trichloroethene		660 U	109 %	102 %	620 U	105 %
Dibromochloromethane		660 U	660 U	660 U	620 U	620 U
1,1,2-Trichloroethane		660 U	660 U	660 U	620 U	620 U
Benzene		660 U	88 %	83 %	620 U	85 %
Trans-1,3-Dichloropropene		660 U	660 U	660 U	620 U	620 U
Bromoform		660 U	660 U	660 U	620 U	620 U
4-Methyl-2-pentanone		1300 U	1300 U	1300 U	1200 U	1200 U
2-Hexanone		1300 U	1300 U	1300 U	1200 U	1200 U
Tetrachloroethene		660 U	660 U	660 U	620 U	620 U
1,1,2,2-Tetrachloroethane		660 U	660 U	660 U	620 U	620 U
Toluene		250 J	83 %	78 %	620 U	81 %

*= Outside of EPA CLP QC limits.

10

Cust ID:	B17122	B17122	B17122	VBLKWZ	VBLKWZ BS
RFW#:	001	001 MS	001 MSD	03LVH126-MB1	03LVH126-MB1
Level:	MED	MED	MED	MED	MED

Chlorobenzene	660 U	93 %	86 %	620 U	89 %
Ethylbenzene	660 U	660 U	660 U	620 U	620 U
Styrene	660 U	660 U	660 U	620 U	620 U
Xylene (total)	660 U	660 U	660 U	620 U	620 U
N-butylbenzene	660 U	660 U	660 U	620 U	620 U

*= Outside of EPA CLP QC limits.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B17122

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L537-001

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

Lab File ID: h060920

Level: (low/med) MED

Date Received: 06/04/03

% Moisture: not dec. 15

Date Analyzed: 06/10/03

Column: (pack/cap) CAP

Dilution Factor: 1.82

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	18.234	700	J
2.	UNKNOWN	20.061	30000	J
3.	ALKANE	22.560	20000	J
4.	ALKANE	24.722	100000	J
5.	UNKNOWN	25.542	2000	J
6.	ALKANE	25.937	100000	J
7.	ALKANE	26.322	200000	J
8.	ALKANE	26.678	100000	J
9.	ALKANE	27.201	50000	J
10.	ALKANE	28.722	3000	J

//

1E
 VOLATILE ORGANICS ANALYSIS SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKWZ

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 03LVH126-MB1

Sample wt/vol: 4.00 (g/mL) G Lab File ID: h060917

Level: (low/med) MED Date Received: 06/09/03

% Moisture: not dec. 0 Date Analyzed: 06/09/03

Column: (pack/cap) CAP Dilution Factor: 2.00

Number TICs found: 0 CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/Kg

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

12

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 <input type="checkbox"/>		
Ice Chest No. ERC 01-030	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express		
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Becca et al</i>	Offsite Property No. RSR 107192	Bill of Lading/Air Bill No. NA			

POSSIBLE SAMPLE HAZARDS/REMARKS <i>radiological Tie TO: B7116, B7123, B7122</i> Special Handling and/or Storage <i>N/A</i>	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 - HD
Sample No.	Matrix *	Sample Date	Sample Time										
B7116	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B7123	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B7122	SOIL	5-27-03	1110	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
<i>M. Hulstrom</i>	5/27/03 1415	<i>R. Hulstrom</i>	5/27-03 1415
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>R. Hulstrom</i>	5/27/03 1415	<i>L.B. 3728</i>	1415
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>L.B. 3728</i>	5/30/03 1000	<i>R. Hulstrom</i>	5/30/03 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>R. Hulstrom</i>	5/30/03 1000	<i>F. Hulstrom</i>	5/30/03 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>Heidi En</i>	5/31/03 11:35	<i>J. Hulstrom</i>	5/31/03 11:35
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
- (4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-137, Radium-226, Radium-228, Th-232); 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

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

10g Item's (2) + (4) per Statement
6/4/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133	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	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>	45 Days		
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To RECRA PC BERLINE SERVICES (Formerly TMA) 6-3-03		Offsite Property No. A030 228		Bill of Lading/Air Bill No. SEE OSLC					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie To B171N8 Special Handling and/or Storage COO/HC				Preservation	Cool 4C	Cool 4C			
				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	60mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro- Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B171B7	SOIL	5-29-03	1115	X	X			1371N8	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 µg/g for Carbon 14. *** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.	7M3 5-29-03 SO=Solid SP=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
RECRA PC		5-29-03		ERC		5-29-03			
RECRA PC		5-29-03		I.B. 3728		5-29-03			
I.B. 3728		6-3-03		K. Felle		6-3-03			
RECRA PC		6-3-03		Fed Ex					
RECRA PC		6-4-03/0925		D. Smith		6-4-03/0925			
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					F03-006-134 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
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-B-12 (C3246); (14.5'-17')		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days	
Ice Chest No. ERC 02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To BERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278		Bill of Lading/Air Bill No. SEE OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIC TO B171N9 Special Handling and/or Storage Cool 4°C			Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
			Type of Container	aG	aG	aG	aG	aG	aG
			No. of Container(s)	1	1	1	1	1	1
			Volume	60mL	125mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS			See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time						
B171B8	SOIL	5-29-03	1250	X	X	X	✓		TIC TO: B171N9
CHAIN OF POSSESSION			Sign/Print Names			SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	* The laboratory is to achieve a detection limit of 50 D.P.C./g for Carbon-14.			** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.		S=Soil SE=Soil/soil SO=Solid SL=Sludge W=Water O=Oil G=Gas DS=Dry Solid L=Liquid V=Vegetation X=Other
<i>R. F. Hill</i>	5-29-03 1515	<i>R. F. Hill</i>	5-29-03 1515	TMD 5-20-03					
<i>R. F. Hill</i>	5-29-03 1515	<i>LB 3728</i>	5-29-03 1515	(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)					
<i>LB 3728</i>	6-3-03 1000	<i>R. F. Hill</i>	6-3-03 1000	(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G					
<i>R. F. Hill</i>	6-3-03 1000	<i>Fed Ex</i>		(3) 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 Phosphorus; Isotopic Uranium					
<i>R. F. Hill</i>	6-4-03/0925	<i>D. Hill</i>	6-4-03/0925	(4) Technetium-99; Strontium-90,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	LABORATORY SECTION			Received By		Title
				FINAL SAMPLE DISPOSITION			Disposal Method		Disposed By
									Date/Time
									Date/Time

LIONVILLE LABORATORY INCORPORATED
 SAMPLE RECEIPT CHECKLIST

Client: TNU Hartford

Case Order/Project:

DATE: 5-31-03

PO / SOW# / Release #: F03-006

Laboratory SDG #:

03056537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian:

D. Smith

Laboratory Project Manager:

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

ENT: TNU Handlow

base Order/Project:

DATE: 6-4-03

#) SOW# / Release #: F03-006

Laboratory SDG #:

0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-02-402 / 0.2 °C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17122	001	S	03LE0693	05/27/03	06/06/03	06/27/03
B17122	001	01 S	03LE0693	05/27/03	06/06/03	07/01/03
B171B8	003	S	03LE0693	05/29/03	06/06/03	06/27/03

LAB QC:

SBLKVC	MB1	S	03LE0693	N/A	06/06/03	06/07/03
SBLKVC	MB1 BS	S	03LE0693	N/A	06/06/03	06/07/03
SBLKVC	MB1 BSD	S	03LE0693	N/A	06/06/03	06/07/03





Client: TNU-HANFORD F03-006
LVL #: 0305L537
SDG/SAF # H2250/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-31-2003 & 06-04-2003

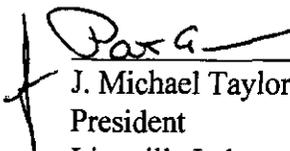
SEMIVOLATILE

Two (2) soil samples were collected on 05-27,29-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 06-06-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 06-07,27-2003 and 07-01-2003.

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 LVL's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. Sample B17122 required a 2000-fold dilution due to high levels of target compounds.
5. All obtainable surrogate recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the target compound Tributylphosphate at a level less than the CRQL.
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

07-11-03
Date

som\group\data\bna\tmu-hanford-0305-537.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 17 pages.

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.

mmz\10-94\gloss.bna



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.

mmz\10-94\gloss.bna



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: 07/08/03 11:22

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250

Work Order: 11343606001

Page: 1a

	Cust ID:	B17122	B17122	B171B8	SBLKVC	SBLKVC BS	SBLKVC BSD
Sample Information	RFW#:	001	001 DL	003	03LE0693-MB1	03LE0693-MB1	03LE0693-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	200	2000	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate	Nitrobenzene-d5	0 D %	0 D %	62 %	70 %	49 %	77 %
Recovery	2-Fluorobiphenyl	0 D %	0 D %	63 %	65 %	47 %	74 %
	Terphenyl-d14	0 D %	0 D %	81 %	81 %	65 %	93 %
	Phenol-d5	0 D %	0 D %	60 %	70 %	48 %	75 %
	2-Fluorophenol	0 D %	0 D %	59 %	63 %	46 %	69 %
	2,4,6-Tribromophenol	0 D %	0 D %	66 %	61 %	52 %	77 %
-----f1-----f1-----f1-----f1-----f1-----f1-----f1-----							
	Phenol	78000 U	780000 U	350 U	330 U	48 %	74 %
	bis(2-Chloroethyl) ether	78000 U	780000 U	350 U	330 U	330 U	330 U
	2-Chlorophenol	78000 U	780000 U	350 U	330 U	47 %	69 %
	1,3-Dichlorobenzene	78000 U	780000 U	350 U	330 U	330 U	330 U
	1,4-Dichlorobenzene	78000 U	780000 U	350 U	330 U	46 %	68 %
	1,2-Dichlorobenzene	78000 U	780000 U	350 U	330 U	330 U	330 U
	2-Methylphenol	78000 U	780000 U	350 U	330 U	330 U	330 U
	2,2'-oxybis(1-Chloropropane)	78000 U	780000 U	350 U	330 U	330 U	330 U
	3- and/or 4-Methylphenol	78000 U	780000 U	350 U	330 U	330 U	330 U
	N-Nitroso-di-n-propylamine	78000 U	780000 U	350 U	330 U	49 %	74 %
	Hexachloroethane	78000 U	780000 U	350 U	330 U	330 U	330 U
	Nitrobenzene	78000 U	780000 U	350 U	330 U	330 U	330 U
	Isophorone	78000 U	780000 U	350 U	330 U	330 U	330 U
	2-Nitrophenol	78000 U	780000 U	350 U	330 U	330 U	330 U
	2,4-Dimethylphenol	78000 U	780000 U	350 U	330 U	330 U	330 U
	bis(2-Chloroethoxy) methane	78000 U	780000 U	350 U	330 U	330 U	330 U
	2,4-Dichlorophenol	78000 U	780000 U	350 U	330 U	330 U	330 U
	1,2,4-Trichlorobenzene	78000 U	780000 U	350 U	330 U	46 %	71 %
	Naphthalene	78000 U	780000 U	350 U	330 U	330 U	330 U
	4-Chloroaniline	78000 U	780000 U	350 U	330 U	330 U	330 U
	Hexachlorobutadiene	78000 U	780000 U	350 U	330 U	330 U	330 U
	4-Chloro-3-methylphenol	78000 U	780000 U	350 U	330 U	49 %	71 %
	2-Methylnaphthalene	78000 U	780000 U	350 U	330 U	330 U	330 U
	Hexachlorocyclopentadiene	78000 U	780000 U	350 U	330 U	330 U	330 U
	2,4,6-Trichlorophenol	78000 U	780000 U	350 U	330 U	330 U	330 U
	2,4,5-Trichlorophenol	200000 U	2000000 U	880 U	840 U	840 U	840 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B17122	B17122	B171B8	SBLKVC	SBLKVC BS	SBLKVC BSD
RFW#:	001	001 DL	003	03LE0693-MB1	03LE0693-MB1	03LE0693-MB1	
2-Chloronaphthalene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
2-Nitroaniline	200000 U	2000000 U	880 U	840 U	840 U	840 U	840 U
Dimethylphthalate	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Acenaphthylene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
2,6-Dinitrotoluene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
3-Nitroaniline	200000 U	2000000 U	880 U	840 U	840 U	840 U	840 U
Acenaphthene	78000 U	780000 U	350 U	330 U	49 %	74 %	
2,4-Dinitrophenol	200000 U	2000000 U	880 U	840 U	840 U	840 U	840 U
4-Nitrophenol	200000 U	2000000 U	880 U	840 U	51 %	79 %	
Dibenzofuran	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
2,4-Dinitrotoluene	78000 U	780000 U	350 U	330 U	58 %	85 %	
Diethylphthalate	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Fluorene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
4-Nitroaniline	200000 U	2000000 U	880 U	840 U	840 U	840 U	840 U
4,6-Dinitro-2-methylphenol	200000 U	2000000 U	880 U	840 U	840 U	840 U	840 U
N-Nitrosodiphenylamine (1)	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
4-Bromophenyl-phenylether	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Pentachlorophenol	200000 U	2000000 U	880 U	840 U	52 %	83 %	
Phenanthrene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Anthracene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Carbazole	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Di-n-butylphthalate	78000 U	780000 U	77 J	330 U	330 U	330 U	330 U
Fluoranthene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Pyrene	78000 U	780000 U	350 U	330 U	61 %	87 %	
Butylbenzylphthalate	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Benzo (a) anthracene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Chrysene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	78000 U	780000 U	18 J	330 U	330 U	330 U	26 J
Di-n-octyl phthalate	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Benzo (b) fluoranthene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Benzo (k) fluoranthene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Benzo (a) pyrene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Indeno (1,2,3-cd) pyrene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Dibenz (a, h) anthracene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Benzo (g, h, i) perylene	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
2-Butoxyethanol	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U
Benzyl alcohol	78000 U	780000 U	350 U	330 U	330 U	330 U	330 U

*= Outside of EPA CLP QC limits.

Cust ID: B17122 B17122 B171B8 SBLKVC SBLKVC BS SBLKVC BSD

RFW#: 001 001 DL 003 03LE0693-MB1 03LE0693-MB1 03LE0693-MB1

Tributylphosphate 2000000 E 5500000 BD 350 U 18 J 330 U 23 JB

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

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17122

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

Client: TNUHANFORD F03-006 H2250

Matrix: (soil/water) SOIL

Lab Sample ID: Q305L537-001

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

Lab File ID: D062717

Level: (low/med) LOW

Date Received: 06/04/03

% Moisture: 15 decanted: (Y/N) __

Date Extracted: 06/06/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/27/03

Injection Volume: 2.0 (uL)

Dilution Factor: 200

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 10

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	9.802	600000	J
2.	ALKANE	10.911	200000	J
3.	ALKANE	11.382	500000	J
4.	ALKANE	11.714	200000	J
5.	ALKANE	11.792	200000	J
6.	ALKANE	12.281	300000	J
7.	ALKANE	12.412	400000	J
8.	ALKANE	12.849	600000	J
9.	ALKANE	13.198	200000	J
10.	ALKANE	14.202	500000	J

9

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B171B8

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

Client: TNUHANFORD F03-006 H2250

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L537-003

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

Lab File ID: D062715

Level: (low/med) LOW

Date Received: 06/04/03

% Moisture: 5 decanted: (Y/N) __

Date Extracted: 06/06/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/27/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

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

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.438	400	JB
2.	ALDOL CONDENSATE	4.822	400	JAB
3.	ALDOL CONDENSATE	5.416	30000	JAB
4. 79-34-5	1,1,2,2-TETRACHLOROETHANE	6.682	90	JN
5.	PHTHALATE	19.612	300	J
6.	UNKNOWN	21.096	70	J
7.	ALKANE	25.837	100	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKVC

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

Client: TNUHANFORD F03-006 H2250

Matrix: (soil/water) SOIL

Lab Sample ID: 03LE0693-MB1

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

Lab File ID: D060711

Level: (low/med) LOW

Date Received: 06/06/03

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

Date Extracted: 06/06/03

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/07/03

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 3

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.184	400	J
2.	ALDOL CONDENSATE	3.540	500	JA
3.	ALDOL CONDENSATE	4.183	30000	JA

11

Lionville Laboratory Use Only

Custody Transfer Record/Lab Work Request Page 1 of 1



0305 L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A-F G I J B C D E H

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	1								2								
Est. Final Proj. Sampling Date	#/Type Container	Liquid																
Project # <u>11343-606-001-9999-00</u>		Solid	1ag	1ag			1ag	1ag	1ag	1ag			1ag	1ag	1ag			1ag
Project Contact/Phone #	Volume	Liquid																
Lionville Laboratory Project Manager <u>Orlette Johnson</u>		Solid	60	120			60	60	60	60			60	60	60			60
QC <u>SPEL</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives																	
Date Rec'd <u>5.31.03/64.03</u> Date Due <u>7.4.03</u>	ANALYSES REQUESTED	ORGANIC						INORG										
		VOA	SVOCs	PCB	Herb	Alcohols	Rest	Chloro	Metal	CN	Hex	Chrom	OC +	NO ₂	NO ₃	As	NO ₂ /NO ₃	Chrom

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 (S)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only											
			MS	MSD				0624H	0625X	0626	0626	0626	0626	0626	0626	0626	0626	0626	0626
								0626	0626	0626	0626	0626	0626	0626	0626	0626	0626	0626	0626
	001	B17122	X	X	S	5.27.03	1110	X	X (W/MSD)	X (W/MSD)	X	X	X	X	X	X	X	X	
	002	B171B7				5.29.03	1115				X	X							
	003	B171B8				5.29.03	1250		X (1/1250)	X (1/1250)	✓						✓	X	

Special Instructions: SAF # F03-006
 Run Matrix QC (do not use 001) ^{SA}_{4/16}
 MET @ = RCRA + Sb, Be, Bi, B, Cu, Ni
 INORG @ = IC, Cl, F, NO₂, NO₃, PO₄, SO₄, I, NH₃, IPH, ICMSO

DATE/REVISIONS:
 6-5-03 1. Per Client Add metals + anion to -003
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

Lionville Laboratory Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC/Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>0.3</u> °C
2) Ambient or <u>Chilled</u> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	5.31.03	11:35
<u>[Signature]</u>	<u>[Signature]</u>	6.4.03	09:25

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>		

CO-POSTE WASTE ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES:
 # 8393 5074 5238
 + 7907 9893 7339 / 0.2 °C

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 01-030
 Field Logbook No. HNF-N-3361 COA 117504ES10
 Method of Shipment: Federal Express
 Shipped To: EBERLINE SERVICES (Formerly TMA) *Preservation*
 Offsite Property No. RSR 107192
 Bill of Lading/Air Bill No. NA

POSSIBLE SAMPLE HAZARDS/REMARKS: *radiological tie to: B71123, B71124 (B71123, B71124)*

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

Sample No.	Matrix *	Sample Date	Sample Time	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
B71116	SOIL	5-27-03	1030	X	X	X	X	X	X	X	X	X	
B71123	SOIL	5-27-03	1030	X	X	X	X	X	X	X	X	X	
B71122	SOIL	5-27-03	1110	X	X	X	X	X	X	X	X	X	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>[Signature]</i>	5/27/03 1415	<i>[Signature]</i>	5/27-03 1415
<i>[Signature]</i>	5/27/03 1415	<i>[Signature]</i>	5/27/03 1417
<i>[Signature]</i>	5/30/03 1000	<i>[Signature]</i>	5/30/03 1000
<i>[Signature]</i>	5/30/03 1000	<i>[Signature]</i>	5/31/03 11:35
<i>[Signature]</i>	5/31/03 11:35	<i>[Signature]</i>	5/31/03 11:35

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, Th-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=Soilment
 SO=Solid
 SL=Sludge
 W=Water
 O=Oil
 A=Air
 DS=Dryn Solids
 DL=Dryn Liquids
 WI=Wipe
 L=Liquid
 V=Vegetation
 X=Other

LABORATORY SECTION Received By: *[Signature]* Title: *log items (2) + (4) per Steve Trent* Date/Time: *6/4/03*

FINAL SAMPLE DISPOSITION Disposal Method: *[Signature]* Date/Time: *[Signature]*

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133		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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To KFCRA PE BERLINE SERVICES (Formerly TMA) 8-200		Offsite Property No. A030 228		Bill of Lading/Air Bill No. SEE OSPL							
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie To B171N8 Special Handling and/or Storage CO014c				Preservation		Cool 4C	Cool 4C				
				Type of Container		aG	aG				
				No. of Container(s)		1	1				
				Volume		60mL	60mL				
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151						
Sample No.	Matrix *	Sample Date	Sample Time								
B171B7	SOIL	5-29-03	1115	X	X				B171N8		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		***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.			
<i>[Signature]</i>		5-29-03 1515		ERC		5-29-03 1515					
<i>[Signature]</i>		5-29-03 1515		R. F. ...		5-29-03 1515					
<i>[Signature]</i>		5-29-03 1000		I.B. 3728		5-29-03 1000					
<i>[Signature]</i>		6-3-03 1000		R. F. ...		6-3-03 1000					
<i>[Signature]</i>		6-3-03 1000		Fed Ex							
<i>[Signature]</i>		6-4-03/0925		D. ...		6-4-03/0925		S-Soil SL-Slag W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue Wt-Wipe L-Liquid V-Vegetation X-Other			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
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					F03-006-134		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-B-12 (C3246); (14.5'-17')			SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express				
Shipped To EDERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278			Bill of Lading/Air Bill No. SEE OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tc To B171N9 Special Handling and/or Storage Cool 4°C				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
				Type of Container	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time							
B171B8	SOIL	5-29-03	1250	X	X	X	✓			B171N9
CHAIN OF POSSESSION										
Relinquished By/Removed From			Date/Time		Received By/Stored In			Date/Time		Matrix *
R. F. Kelly			5-29-03 1515		R. Kelly			5-29-03 1515		S=Soil
R. Kelly			5-29-03 1515		LB 3728			5-29-03 1515		SE=Soilment
LB 3728			6-3-03 1000		R. Kelly			6-3-03 1000		SO=Solid
R. Kelly			6-3-03 1000		R. Kelly			6-3-03 1000		Sl=Sludge
R. Kelly			6-3-03 1000		R. Kelly			6-3-03 1000		W=Water
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		O=Oil
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		A=All
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		DS=Drum Solid
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		PL=Plastic Liner
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		T=Tracer
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		Wl=Wipe
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		L=Liquid
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		V=Vegetation
R. Kelly			6-4-03/0925		D. J. Miller			6-4-03/0925		X=Other
LABORATORY SECTION	Received By		Title		SPECIAL INSTRUCTIONS					Matrix *
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. TMO 5-29-03 ** 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) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-153); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (4) Technetium-99; Strontium-90,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237.					S=Soil SE=Soilment SO=Solid Sl=Sludge W=Water O=Oil A=All DS=Drum Solid PL=Plastic Liner T=Tracer Wl=Wipe L=Liquid V=Vegetation X=Other

LIONVILLE LABORATORY INCORPORATED
 SAMPLE RECEIPT CHECKLIST

Client: TNU Hartford
 Case Order/Project:

DATE: 5-31-03

W/SOW# / Release #: F03-006

Laboratory SDG #: 03056537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01 - 030 / 0.3°C

Laboratory Sample Custodian: *D. Smith*
 Laboratory Project Manager:

LIONVILLE LABORATORY INCORPORATED
 SAMPLE RECEIPT CHECKLIST

Client: TNU Harlow

Case Order/Project:

DATE: 6-4-03

SOW# / Release #: F03-006

Laboratory SDG #:

0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl1 Sample Acceptance Policy? (identify all bones not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-02-402 / 0.2°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
 PEST/PCB ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B171B7	002	S	03LE0683	05/29/03	06/05/03	06/27/03
B171B7	002 MS	S	03LE0683	05/29/03	06/05/03	06/27/03
B171B7	002 MSD	S	03LE0683	05/29/03	06/05/03	06/27/03

LAB QC:

PBLKVM	MB1	S	03LE0683	N/A	06/05/03	06/27/03
PBLKVM	MB1 BS	S	03LE0683	N/A	06/05/03	06/27/03

98 7/4/03





Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L537
SDG/SAF #: H2250/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 06-04-03

PESTICIDE

One (1) soil sample was collected on 05-29-03.

The sample and its associated QC samples were extracted on 06-05-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-27-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. Six (6) of ten (10) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. Five (5) of six (6) blank spike recoveries were 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 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


Date

pefr:\group\data\pest\tnu hanford\05L-537.pes

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 11 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03GC 231

Initiator: Boyle Santoro
 Date: 6/30/03
 Client: TNU

Batch: 8 0305
11213 0306 L537
 Samples: 85
 Method: 8WB46/MCA/WWICLP/

Parameter: 0608H
 Matrix: Soil
 Prep Batch: 03LE0603

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① High spike and surrogate recoveries in 85. MS + MSD are good. Sample is clean.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description: None

- 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:

- 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:

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

- X Initiator
- X Lab General Manager: M. Taylor
- X Project Mgr: Stone/Johnson/Haslett
- X Technical Mgr: Wesson/Dantels
- X QA (file)
- Data Management: Feldman
- Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Layman
- Log-in: Melnic
- Admin: Soos
- Other: _____



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 06/30/03 10:53

9

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	B171B7	B171B7	B171B7	PBLKVM	PBLKVM BS
	RFW#:	002	002 MS	002 MSD	03LE0683-MB1	03LE0683-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
Surrogate: Tetrachloro-m-xylene		95 %	110 %	105 %	100 %	130 * %
Decachlorobiphenyl		125 * %	130 * %	130 * %	130 * %	170 * %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Alpha-BHC		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
Beta-BHC		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
Delta-BHC		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	98 %	92 %	1.7 U	140 * %
Heptachlor		1.7 U	106 %	102 %	1.7 U	136 * %
Aldrin		1.7 U	100 %	94 %	1.7 U	128 %
Heptachlor epoxide		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
Endosulfan I		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
Dieldrin		3.3 U	109 %	109 %	3.3 U	148 * %
4,4'-DDE		3.3 U	6.7 U	6.7 U	3.3 U	3.3 U
Endrin		3.3 U	122 %	114 %	3.3 U	156 * %
Endosulfan II		3.3 U	6.7 U	6.7 U	3.3 U	3.3 U
4,4'-DDD		3.3 U	6.7 U	6.7 U	3.3 U	3.3 U
Endosulfan sulfate		3.3 U	6.7 U	6.7 U	3.3 U	3.3 U
4,4'-DDT		3.3 U	97 %	92 %	3.3 U	144 * %
Methoxychlor		17 U	33 U	33 U	17 U	17 U
Endrin ketone		3.3 U	6.7 U	6.7 U	3.3 U	3.3 U
Endrin aldehyde		3.3 U	6.7 U	6.7 U	3.3 U	3.3 U
alpha-Chlordane		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	3.3 U	3.3 U	1.7 U	1.7 U
Toxaphene		170 U	330 U	330 U	170 U	170 U

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

Handwritten signature/initials



0305L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A - F G I J B C D E H

Client <u>TNU-Hanford F03-006</u>	Refrigerator # <u>1</u>	<u>2</u>
Est. Final Proj. Sampling Date	#/Type Container	Liquid
Project # <u>11343-606-001-9999-00</u>	Liquid	<u>10g</u>
Project Contact/Phone #	Liquid	<u>10g</u>
Lionville Laboratory Project Manager <u>Delette Johnson</u>	Solid	<u>60</u> <u>120</u> <u>60</u> <u>60</u> <u>60</u> <u>60</u> <u>60</u> <u>60</u> <u>60</u> <u>60</u>
QC <u>SPEL Del STD TAT 30 days</u>	Preservatives	<u>-</u>

Date Rec'd <u>5.31.03/64.03</u>	Date Due <u>7.4.03</u> <u>6.30.03</u>	ANALYSES REQUESTED
		ORGANIC: VOA, PCB, Herb, Alcohols, Glycols, Ketones, Pest, Chloro, Herb. INORG: Metal, CN, Hex, Chrome, OIL+, SCREWS, NO2, ND3, E-chem, Ann., ND3/ND2, OIL+, ND3/ND2, Hex, Chrome

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (M)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				0624H	0625X	0620	0640	OGSC	0608H	0HB6X	MCTO	ICR6	IOGGR	ININZ	INORW	IN3N2	IOGGR	ICR6
	001	B17122	X	X	S	5.27.03	1110	X	X (W/MSD)	X (W/MSD)	X	X	X	X	X	X	X	X	X			
	002	B171B7			S	5.29.03	1115				X	X										
	003	B171B8			S	5.29.03	1250		X (1/1250)	X (1/1250)	✓							✓	X	X		

Special Instructions: SAF # F03-006
Run Matrix QC (do not use 001) SA
MCTO = RCRA + Sb, Be, Bi, B, Cu, Ni
INORW = IC-Cl, F, NO2, NOx, PO4, SO4, I, NH3N, LPH, ICMO

DATE/REVISIONS:
6-5-03 1. Per Client Add metals + anions to - 003
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

Lionville Laboratory Use Only

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

2) Ambient or Chilled
 3) Received in Good Condition or N

4) Samples Properly Preserved or N

5) Received Within Holding Time or N

Tamper Resistant Seal was:
 1) Present on Outer Package or N
 2) Unbroken on Outer Package or N
 3) Present on Sample or N
 4) Unbroken on Sample or N
 COC/Record Present Upon Sample Rec't or N
 Cooler Temp. 0.3 °C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Joe Ex</u>	<u>D. Smith</u>	<u>5.31.03</u>	<u>11:35</u>	<u>COMPOSITE WASTE</u>	<u>ORIGINAL REWRITTEN</u>		
<u>Joe Ex</u>	<u>D. Smith</u>	<u>6.4.03</u>	<u>09:25</u>				

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
839.3 5074 5238
7907 9893 1339 / 0.2

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133		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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days			
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RECRA PE EDERLINE SERVICES (Formerly TMA) 6-3-03		Offsite Property No. A030 228				Bill of Lading/Air Bill No. SEE OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie to B171N8 Special Handling and/or Storage COO/4e				Preservation		Cool 4C	Cool 4C				
				Type of Container		aG	aG				
				No. of Container(s)		1	1				
				Volume		60mL	60mL				
SAMPLE ANALYSIS				Pesticides - 8081	Chloro- Herbicides - EPA8151						
				TIED!							
Sample No.	Matrix *	Sample Date	Sample Time								
B171B7	SOIL	5-29-03	1115	X	X				B171N8		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS		Matrix * SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time Wl=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 5-29-03	Received By/Stored In <i>[Signature]</i>		Date/Time 5-29-03	*The laboratory is to achieve a detection limit of 50.0 µg/g for Carbon-14. **The laboratory is to report both kerosene and diesel range compounds from WTRH-D analysis.					
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 5-29-03	Received By/Stored In <i>[Signature]</i>		Date/Time 5-29-03						
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 6-3-03	Received By/Stored In <i>[Signature]</i>		Date/Time 6-3-03						
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 6-3-03	Received By/Stored In <i>[Signature]</i>		Date/Time						
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 6-4-03/0925	Received By/Stored In <i>[Signature]</i>		Date/Time 6-4-03/0925						
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time						
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					F03-006-134	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-B-12 (C3246); (14.5'-17')		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days		
Ice Chest No. ERC 02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278		Bill of Lading/Air Bill No. SEE OS/PC						
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIC TO B171B9 Special Handling and/or Storage Cool 4°C				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
				Type of Container	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time							
B171B8	SOIL	5-29-03	1250	X	X	X	✓		B171B9	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 5-29-03 1515		Received By/Stored In <i>[Signature]</i>		Date/Time 5-29-03 1515		** 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.		S=Soil SE=Sediment SO=Solid SI=Sludge W=Water O=Oil A=Air DS=Drum Spill DL=Drum Leak T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 5-29-03 1515		Received By/Stored In <i>[Signature]</i>		Date/Time 5-29-03 1515		(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		
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 6-3-03 1000		Received By/Stored In <i>[Signature]</i>		Date/Time 6-3-03 1000		(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Th-126); Total Uranium, Americium-241; Isotopic Plutonium; Isotopic Uranium		
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 6-3-03 1000		Received By/Stored In <i>[Signature]</i>		Date/Time		(4) Technetium-99; Strontium-90,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237		
Relinquished By/Removed From <i>[Signature]</i>		Date/Time 6-4-03/0925		Received By/Stored In <i>[Signature]</i>		Date/Time 6-4-03/0925				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time				
LABORATORY SECTION	Received By	Title				Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time				

10

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford
 Purchase Order/Project:

DATE: 5.31.03

LF# / SOW# / Release #: F03-004

Laboratory SDG #: 03056537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian: [Signature]
 Laboratory Project Manager: [Signature]

Lionville Laboratory, Inc.
 GRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17122	001	S	03LVJ610	05/27/03	N/A	06/10/03
B171B8	003	S	03LVJ610	05/29/03	N/A	06/10/03
B171B8	003 MS	S	03LVJ610	05/29/03	N/A	06/10/03
B171B8	003 MSD	S	03LVJ610	05/29/03	N/A	06/10/03

LAB QC:

TBLKXH	MB1	S	03LVJ610	N/A	N/A	06/10/03
TBLKXH	MB1 BS	S	03LVJ610	N/A	N/A	06/10/03

9/26/24/03





Analytical Report

Client: TNU HANFORD F03-006
LVL #: 0305L537
SDG/SAF#: H2250/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-31-03, 06-04-03

GRO

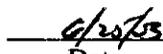
The set of samples consisted of two (2) soil samples collected on 05-27,29-03.

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 06-10-03. 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 LVL's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
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


Date

pef\Rrgroup\data\gro\tnu\05L-537.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 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: 06/22/03 09:00

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1

	Cust ID:	B17122	B171B8	B171B8	B171B8	TBLKKH	TBLKKH BS
Sample	RFW#:	001	003	003 MS	003 MSD	03LVJ610-MB1	03LVJ610-MB1
Information	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		86 %	90 %	86 %	97 %	99 %	98 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Gasoline Range Organics (GRO)_____		170 U	110	82 %	74 %	30 U	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

Handwritten signature/initials



0305L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A-F G I J B C D E H

Client <u>TNU-Hanford</u> <u>F03-006</u>	Refrigerator # <u>1</u>
Est. Final Proj. Sampling Date _____	#/Type Container
Project # <u>11343-606-001-9999-00</u>	Liquid _____
Project Contact/Phone # _____	Solid <u>12g</u>
Lionville Laboratory Project Manager <u>Orlotta Johnson</u>	Volume
QC <u>SPEL</u> Del <u>STD</u> TAT <u>30 days</u>	Liquid _____
	Solid <u>60</u>
	Preservatives _____
Date Rec'd <u>5.31.03/64.03</u> Date Due <u>7-4-03</u>	ANALYSES REQUESTED
	ORGANIC: VOA, PAH, PCB, Herb, Alcohols, Chloro, Rest
	INORG: Hex, Cr, Cu, Ni, Pb, Zn, Cd, Fe, Mn, Ag, As, Se, Hg, Mo, Sb, Bi, B, Ba, Be, Br, Ca, Co, Cr, Cs, D, I, K, Li, Mg, Na, Ni, N, O, P, S, Si, Sn, Sr, Tl, U, V, W, Y, Zn, Zr

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				0624H	0615X	0620	0640	0608C	0608H	06B&X	MC10	ICR6	IOGGA	ININ2	INOR60	ININ2	IOGGA	ICR6
			MS	MSD				0624H	0615X	0620	0640	0608C	0608H	06B&X	MC10	ICR6	IOGGA	ININ2	INOR60	ININ2	IOGGA	ICR6
	001	B17122	X	X	S	5-27-03	1110	X	X (w/mats)	X (w/vol)	X	X	X	X								
	002	B171B7			S	5-29-03	1115		X (crk)	X	X											
	003	B171B8			S	5-29-03	1250		X (1/125ml)	X (1/60ml)	✓								X	X		

Special Instructions: SAF # F03-006
 Run Matrix QC (do not use 001) ^{SA}/_{qth}
 MC10 = RCRA + Sb, Be, Bi, B, Cu, Ni
 INOR60 = IC-CI, F, NO₂, NO_x, PO₄, SO₄, INH3N, LPH, ICNTO

DATE/REVISIONS:
 6-5-03 1. Per Client Add metals + anion to - 003
 _____ 2. _____
 _____ 3. _____
 _____ 4. _____
 _____ 5. _____
 _____ 6. _____

Lionville Laboratory Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC/Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>0.3</u> °C
2) Ambient or <u>Chilled</u> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Property Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Time <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time
<u>Steve Ex</u>	<u>D. Smith</u>	<u>5.31.03</u>	<u>11:35</u>
<u>Steve Ex</u>	<u>D. Smith</u>	<u>6.4.03</u>	<u>09:25</u>

Relinquished by	Received by	Date	Time
<u>COMPOSITE WASTE</u>	<u>ORIGINAL</u>		
	<u>REWRITTEN</u>		

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES:
 # 839.3 5074 5238

7907 9893 1339 / 0.2

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) 62.5-65 ft SAF No: F03-006 Air Quality:

Ice Chest No: ERC 01-030 Field Logbook No: HNF-N-3361 COA: 117504ES10 Method of Shipment: Federal Express

Shipped To: EBERLING SERVICES (Formerly TMA) Offsite Property No: RSR 107192 Bill of Lading/Air Bill No: NA

Possible Sample Hazards/Remarks Radiological Tie TO: B7116, B7123, B7122 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
	Add VOA 8260A									

Sample No.	Matrix *	Sample Date	Sample Time	See item (1)	See item (2)	See item (3)	Chromium Hex	See item (4)	NO2/NO3	Oil & Grease	See item (5)	See item (6)	Tritium
B7116	SOIL	5-27-03	1030	X	X	X	X	X	X	X	X	X	X
B7123	SOIL	5-27-03	1030	X	X	X	X	X	X	X	X	X	X
B7122	SOIL	5-27-03	1110	X	X	X	X	X	X	X	X	X	X

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[Signature]	5/27/03 1415	[Signature]	5-27-03 1415
[Signature]	5/27/03 1415	[Signature]	5/27/03 1415
[Signature]	5-30-03 1000	[Signature]	5-30-03 1000
[Signature]	5-30-03 1000	[Signature]	5-30-03 1000
[Signature]	5-31-03/11:35	[Signature]	5-31-03/11:35

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.

- Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
- Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
- 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)
- IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
- Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Th-128); 100% Uranium, Americium-241, Isotopic Plutonium, Isotopic Uranium
- Technetium-99, Strontium-89, 90 - Total Sr, Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Beryllium-70

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

log Item's (2) + (4) per statement of 6/4/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133		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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RECRA ECRLINE SERVICES (Formerly TMA) 6-3-03		Offsite Property No. A030 228				Bill of Lading/Air Bill No. SEE OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie To B171N8 Special Handling and/or Storage CO014c				Preservation		Cool 4C	Cool 4C				
				Type of Container		aG	aG				
				No. of Container(s)		1	1				
				Volume		60mL	60mL				
SAMPLE ANALYSIS				Pesticides - 8081		Chloro-Herbicides - EPA8151					
								TILD			
Sample No.	Matrix *	Sample Date	Sample Time								
B171B7	SOIL	5-29-03	1115	X	X				B171N8		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		***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 WTEPH-D analysis.			
<i>[Signature]</i>		1515		ERC		1515					
<i>[Signature]</i>		5-29-03		<i>[Signature]</i>		5-29-03					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
<i>[Signature]</i>		1515		I.B. 3728		5-29-03					
<i>[Signature]</i>		5-29-03		<i>[Signature]</i>		5-29-03					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Transe WI=Wipe L=Liquid V=Vegetation X=Other			
<i>[Signature]</i>		1000		<i>[Signature]</i>		1000					
<i>[Signature]</i>		6-3-03		<i>[Signature]</i>		6-3-03					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
<i>[Signature]</i>		1000		Fed Ex							
<i>[Signature]</i>		6-3-03		<i>[Signature]</i>							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
<i>[Signature]</i>		6-4-03/0925		<i>[Signature]</i>		6-4-03/0925					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
<i>[Signature]</i>				<i>[Signature]</i>							
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			F03-006-134	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-B-12 (C3246); (14.5'-17')		SAF No. F03-006	Air Quality <input type="checkbox"/>	
Ice Chest No. ERC 02-402	Field Logbook No. HNF-N-3361	COA 117504ES10		Method of Shipment Federal Express		
Shipped To EBERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIC TO B171B9 Special Handling and/or Storage Cool 4°C	Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1
	Volume	60mL	125mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time						
B171B8	SOIL	5-29-03	1750	X	X	X	✓		

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From M. Johansen 5-29-03	Date/Time 1515	Received By/Stored In R. Feller 5-29-03	Date/Time 1515	** 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.		S=Soil SE=Soil/Emul SO=Solid SL=Sludge W=Water O=Oil A=Asphalt DS=Dry Solid PL=Plant T=Trace W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From R. Feller 5-29-03	Date/Time 1515	Received By/Stored In L. B. 3728 5-29-03	Date/Time 1515	(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) 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 (4) Technetium-99; Strontium-90, 90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237		
Relinquished By/Removed From L. B. 3728 6-3-03	Date/Time 1000	Received By/Stored In R. Feller 6-3-03	Date/Time 1000			
Relinquished By/Removed From R. Feller 6-3-03	Date/Time 1000	Received By/Stored In Fed Ex	Date/Time			
Relinquished By/Removed From Fed Ex 6-4-03/0925	Date/Time 1000	Received By/Stored In J. Hulstrom 6-4-03/0925	Date/Time			

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

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

JENT: TNU Hartford
Purchase Order/Project:

DATE: 5.31.03

FW / SOW# / Release #: F03-006

Laboratory SDG #: 0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian: *[Signature]*
Laboratory Project Manager: *[Signature]*

Lionville Laboratory, Inc.
HBGX ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B171B7	002	S	03LE0699	05/29/03	06/07/03	06/12/03
B171B7	002 MS	S	03LE0699	05/29/03	06/07/03	06/12/03
B171B7	002 MSD	S	03LE0699	05/29/03	06/07/03	06/12/03

LAB QC:

PBLKVR	MB1	S	03LE0699	N/A	06/07/03	06/12/03
PBLKVR	MB1 BS	S	03LE0699	N/A	06/07/03	06/12/03
PBLKVR	MB1 BSD	S	03LE0699	N/A	06/07/03	06/12/03

7/2/03





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L537
SDG/SAF#: H2250/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 06-04-03

HERBICIDE

One (1) soil sample was collected on 05-29-03.

The sample and its associated QC samples were extracted on 06-07-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-12-03. The extraction and analysis procedure was based on method 8151A.

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

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


Iain Daniels

Laboratory Manager
Lionville Laboratory Incorporated

pefr:\group\data\herb\tnu\05L-537.doc


Date

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 11 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 036C 230

Initiator: Boyer Santos
 Date: 6/30/03
 Client: TUV

Batch: 0305L537
 Samples: MS, MSD, BSD
 Method: SW846/MCAWW/CLPI

Parameter: CHBGX
 Matrix: Soil
 Prep Batch: 03LE0699

1. Reason for SDR

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

b. General Discrepancy

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

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

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

- ① Low Dicamba recovery in MS and MSD. BS and BSD are good.
- ② Low 2,4-DB recovery in MSD. BS, BSD and MS are good.
- ③ High Dinoseb recovery in BSD. MS, MSD, BS are good.

Sample is dem.

2. Known or Probable Causes(s)

- ① Matrix Interference
- ② Matrix Interference

3. Discussion and Proposed Action

Other Description: Normal

- 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:

[Signature] 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:

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
<input type="checkbox"/>	<input checked="" type="checkbox"/> Initiator
<input type="checkbox"/>	<input checked="" type="checkbox"/> Lab General Manager: M. Taylor
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Project Mgr: Stone/Johnson/Haslett
<input type="checkbox"/>	<input checked="" type="checkbox"/> Technical Mgr: Wesson/Daniels
<input type="checkbox"/>	<input checked="" type="checkbox"/> QA (file)
<input type="checkbox"/>	<input type="checkbox"/> Data Management: Feldman
<input type="checkbox"/>	<input type="checkbox"/> Sample Prep: Beegle/Kiger

Route	Distribution of Completed SDR
<input type="checkbox"/>	<input type="checkbox"/> Metals: Beegle
<input type="checkbox"/>	<input type="checkbox"/> Inorganic: Perrone
<input type="checkbox"/>	<input type="checkbox"/> GC/LC: Kiger
<input type="checkbox"/>	<input type="checkbox"/> MS: Rychlak/Layman
<input type="checkbox"/>	<input type="checkbox"/> Log-in: Melnic
<input type="checkbox"/>	<input type="checkbox"/> Admin: Soos
<input type="checkbox"/>	<input type="checkbox"/> Other: _____



GLOSSARY OF HERBICIDE DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF HERBICIDE DATA

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

Lionville Laboratory, Inc.

Herbicides, Special List

Report Date: 06/30/03 10:06

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1

6

Sample Information	Cust ID:	B171B7	B171B7	B171B7	PBLKVR	PBLKVR BS	PBLKVR BSD
	RFW#:	002	002 MS	002 MSD	03LE0699-MB1	03LE0699-MB1	03LE0699-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
Surrogate:	DCAA	93 %	73 %	81 %	138 %	112 %	148 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Dalapon		180 U	60 %	68 %	170 U	94 %	120 %
Dicamba		71 U	35 * %	46 * %	67 U	83 %	115 %
Dichloroprop		180 U	66 %	75 %	170 U	92 %	118 %
2,4-D		35 U	83 %	67 %	33 U	99 %	126 %
2,4,5-TP (Silvex)		18 U	122 %	111 %	17 U	90 %	114 %
2,4,5-T		18 U	60 %	65 %	17 U	90 %	120 %
2,4-DB		180 U	81 %	58 * %	170 U	87 %	112 %
Dinoseb		18 U	74 %	85 %	17 U	91 %	122 * %

Handwritten signature/initials

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



0305L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A-F G I J B C D E H

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	1								2														
Est. Final Proj. Sampling Date	#/Type Container	Liquid																						
Project # <u>11343-606-001-9999-00</u>		Solid	10g	12g			110g	10g	10g	10g		10g	10g	10g		10g								
Project Contact/Phone #	Volume	Liquid																						
Lionville Laboratory Project Manager <u>Orlotta Johnson</u>		Solid	60	120			60	60	60		60	60	60		60									
QC <u>SPEL</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives																							
Date Rec'd <u>5.31.03/64.03</u> Date Due <u>7-4-03</u> <u>6-30-03</u>	ANALYSES REQUESTED →	ORGANIC						INORG																
		VOA	SVOC	PCB	PCB	Herb	Alcohol	Synthetic	Pest	Chloro	Mercur	Metal	CN	Hex	Chrom	OLL+	SCOR	NO2	NO3	Ec	Am.	NO3/NO2	SO4	SO4

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																	
			MS	MSD				0624H	0625X	0260	0640	OCSC	0608H	0HB6X	MCTO	ICCL	IOGAR	ININ2	INORIN	ININ2	IOGGA	ICR6			
	001	B17122	X	X	S	5.27.03	1110	X	X (W/MSD)	X (W/MSD)	X		X	X	X	X									
	002	B171B7				5.29.03	1115				X	X													
	003	B171B8				5.29.03	1250		X (1/1250)	X (1/100m)	✓											✓	X	X	

Special Instructions: SAF # F03-006
Run Matrix QC (do not use 001)
 MCTO = RCRA + Sb, Ba, Bi, B, Cu, Ni
 INORIN = IC - Cl, F, NO₂, NO₃, PO₄, SO₄, I, NH₃N, LPH, ICMTD

DATE/REVISIONS:

6-5-03	1. Per Client Add metals + organics to - 003
	2.
	3.
	4.
	5.
	6.

Lionville Laboratory Use Only

Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered <input type="checkbox"/> Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC/Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>0.3</u> °C
2) Ambient or <u>Chilled</u> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N	

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES: # 8393 5074 5238

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	5.31.03	11:35
<u>[Signature]</u>	<u>[Signature]</u>	6.4.03	09:25

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>		

CO-POSITE WASTE ORIGINAL REWRITTEN

7907 9893 1339 / 0.2 °C

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 <input type="checkbox"/>	45 Days	
Ice Chest No. ERC 01-030	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express		Bill of Lading/Air Bill No. NA		
Shipped To EDERLINE SERVICES (Formerly TMA) <i>ms 5-27-03</i>		Offsite Property No. RSR 107192					

POSSIBLE SAMPLE HAZARDS/REMARKS <i>ms 5-27-03</i> Radiological Tie TO: B7110, B7123, B7122 (B7110, B7123) 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 - HD
Sample No.	Matrix *	Sample Date	Sample Time	Add VOA 8260A									
B7110	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B7123	SOIL	5-27-03	1030	X	X	X	X	X	X	X			
B7122	SOIL	5-27-03	1110	X	X	X	X	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From <i>MacDonald</i>	Date/Time 5/27/03 1415	Received By/Stored In <i>R. F. Hill</i>	Date/Time 5-27-03 1415
Relinquished By/Removed From <i>R. F. Hill</i>	Date/Time 5-27-03 1415	Received By/Stored In <i>LB</i>	Date/Time 5-27-03 1415
Relinquished By/Removed From <i>LB</i>	Date/Time 5-30-03 1000	Received By/Stored In <i>R. F. Hill</i>	Date/Time 5-30-03 1000
Relinquished By/Removed From <i>R. F. Hill</i>	Date/Time 5-30-03 1000	Received By/Stored In <i>F. E. P.</i>	Date/Time 5-30-03 1000
Relinquished By/Removed From <i>F. E. P.</i>	Date/Time 5-31-03/11:35	Received By/Stored In <i>D. J. Miller</i>	Date/Time 5-31-03/11:35
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, Th-232); 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=Soilment
- SD=Solid
- SL=Sludge
- W=Water
- O=Oil
- A=Air
- DS=Drum Solids
- DL=Drum Liquids
- T=Time
- W=Wipe
- L=Liquid
- V=Vegetation
- X=Other

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

10g Item's (2) + (4) per Steve Trent 6/4/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133		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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RECRA PE EDERLINE SERVICES (Formerly TMA) 6-203		Offsite Property No. A030 228				Bill of Lading/Air Bill No. SEE OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIC TO B171N8 Special Handling and/or Storage COO/4c				Preservation		Cool 4C	Cool 4C				
				Type of Container		aG	aG				
				No. of Container(s)		1	1				
				Volume		60mL	60mL				
SAMPLE ANALYSIS				Pesticides - 8081	Chloro- Herbicides - EPA8151						
Sample No.	Matrix *	Sample Date	Sample Time								
B171B7	SOIL	5-29-03	1115	X	X				B171N8		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** 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 WTRPH-D analysis.			
M. J. ...		5-29-03 1515		ERC		5-29-03 1515		7M3 5-29-03			
R. ...		5-29-03 1515		L.B.		5-29-03 1515					
L.B.		6-3-03 1000		R. ...		6-3-03 1000					
R. ...		6-3-03 1000		Fed Ex							
D. ...		6-4-03/0925		D. ...		6-4-03/0925					
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					F03-006-134		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-B-12 (C3246); (14.5'-17')			SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To EDERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278			Bill of Lading/Air Bill No. SEE OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TcTo B171N9 Special Handling and/or Storage Cool 4°C				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None		
				Type of Container	aG	aG	aG	aG	aG	aG		
				No. of Container(s)	1	1	1	1	1	1		
				Volume	60mL	125mL	60mL	60mL	60mL	60mL		
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3			
Sample No.	Matrix *	Sample Date	Sample Time									
B171B8	SOIL	5-29-03	1750	X	X	X					TcTo: B171N9	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				
Relinquished By/Removed From M. Ben... 5-29-03		Date/Time 1515		Received By/Stored In ERC Recra		Date/Time 1515		* 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.				
Relinquished By/Removed From R. Feller R. Fahlke		Date/Time 5-29-03		Received By/Stored In IB 3728		Date/Time 5-29-03		(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) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Th-126); Total Uranium, Americium-241; Isotopic Plutonium; Isotopic Uranium (4) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237				
Relinquished By/Removed From R. Feller R. Fahlke		Date/Time 6-3-03		Received By/Stored In Fed Ex		Date/Time		Matrix * S=Soil SE=Settlement SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Uran Solids PL=Plastic T=Trash WI=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By/Removed From D. E. ...		Date/Time 6-4-03/0925		Received By/Stored In D. ...		Date/Time 6-4-03/0925						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
LABORATORY SECTION	Received By	Title						Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By						Date/Time				

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: TNU Hartford
Purchase Order/Project:

DATE: 5-31-03

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

Laboratory SDG #:

0305LS37

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
 DRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17122	001	S	03LE0686	05/27/03	06/05/03	07/08/03
B171B8	003	S	03LE0686	05/29/03	06/05/03	06/21/03
B171B8	003 MS	S	03LE0686	05/29/03	06/05/03	06/21/03
B171B8	003 MSD	S	03LE0686	05/29/03	06/05/03	06/21/03

LAB QC:

BLK	MB1	S	03LE0686	N/A	06/05/03	06/21/03
BLK	MB1 BS	S	03LE0686	N/A	06/05/03	06/21/03

7/21/03





Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L537
SDG/SAF #: H2250/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-31-03;06-04-03

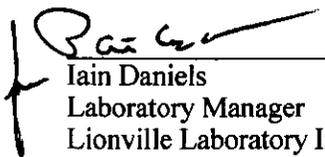
DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 05-27,29-03.

The samples and their associated QC samples were extracted on 06-05-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 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 LVL'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. All matrix spike recoveries were within acceptance criteria.
7. Sample B17122 required a 1000-fold instrument dilution 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
pefr:\group\data\dro\tnu hanford\05L-537.doc

07-11-03
Date

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 11 pages.



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.
- .I** = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.

SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/11/03 08:46

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1

5

	Cust ID:	B17122	B171B8	B171B8	B171B8	BLK	BLK BS
Sample	RFW#:	001	003	003 MS	003 MSD	03LE0686-MB1	03LE0686-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1000	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	D %	36 %	77 %	70 %	79 %	79 %
		=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====
	Diesel Range Organics	14000 U	12.6 U	68 %	69 %	12.0 U	82 %
	Kerosene	24000	12.6 U	12.6 U	12.6 U	12.0 U	12.0 U

7/11/03

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

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133	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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>				
Ice Chest No. ERC-02-402	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express						
Shipped To KFCRA PE EBERLINE SERVICES (Formerly TMA) 6-3-02	Offsite Property No. A030 228		Bill of Lading/Air Bill No. SEE OSLC						
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tic To B171N8 Special Handling and/or Storage Cooler				Preservation	Cool 4C	Cool 4C			
				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	60mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B171B7	SOIL	5-29-03	1115	X	X		B171N8		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			Matrix *		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		<ul style="list-style-type: none"> S=Soil SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquid T=Trace WL=Wipe L=Liquid V=Vegetation X=Other 		
XXXXXXXXXX		5-29-03 1515	ERC		5-29-03 1515				
R. G. G. G. G. G.		5-29-03 1515	1-B 3728		5-29-03 1515				
1-B 3728		6-3-03 1000	R. G. G. G. G.		6-3-03 1000				
R. G. G. G. G.		6-3-03 1000	Fed Ex						
D. W. Smith		6-4-03/0925	D. W. Smith		6-4-03/0925				
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					F03-006-134		Page 1 of 1													
Collector Johansen/Poppe/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-B-12 (C3246); (14.5'-17')			SAF No. F03-006		Air Quality <input type="checkbox"/>															
Ice Chest No. ERC 02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express																
Shipped To EDERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278			Bill of Lading/Air Bill No. SEE OSPC																	
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIE TO B171N9 Special Handling and/or Storage Cool 4°C				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None												
				Type of Container	aG	aG	aG	aG	aG	aG												
				No. of Container(s)	1	1	1	1	1	1												
				Volume	60mL	125mL	60mL	60mL	60mL	60mL												
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3													
Sample No.	Matrix *	Sample Date	Sample Time																			
B171B8	SOIL	5-29-03	1250	X	X	X																
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. TMO 5-29-03 ** 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) 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 (4) Technetium-99, Strontium-90, Total Sr, Isotopic Thorium (Thorium-232), Carbon-14, Iodine-129, Nickel-63, Neptunium-237				S=Soil SE=Softment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solid L=Liquid T=Trace W=Wipe L=Liquid V=Vegetation X=Other										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time																
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time																
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time																
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time																
LABORATORY SECTION		Received By		Title				Date/Time														
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time														

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hornford
Purchase Order/Project:

DATE: 5-31-03

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

Laboratory SDG #:

03056537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl.1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian:

D. Smith

Laboratory Project Manager:

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: TNU HandDow
Purchase Order/Project:

DATE: 6-4-03

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

Laboratory SDG #: 0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-02-402 / 0.2 °C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Handwritten Signature]

Lionville Laboratory, Inc.
 GCSC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17122	001	S	03LE0715	05/27/03	06/10/03	06/11/03
B171B8	003	S	03LE0715	05/29/03	06/10/03	06/11/03
B171B8	003 MS	S	03LE0715	05/29/03	06/10/03	06/11/03
B171B8	003 MSD	S	03LE0715	05/29/03	06/10/03	06/11/03

LAB QC:

BLK	MB1	S	03LE0715	N/A	06/10/03	06/11/03
BLK	MB1 BS	S	03LE0715	N/A	06/10/03	06/11/03





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L537
SDG/SAF#: H2250/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-31-03;06-04-03

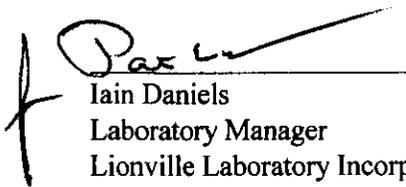
GC SCAN

The set of samples consisted of two (2) soil samples collected on 05-27,29-03.

The samples and their associated QC samples were extracted on 06-10-03 and analyzed on 06-11-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures. The extraction procedure was based on method 3580A (waste dilution -1 g into 5 mL water) and the extracts were analyzed 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. Two (2) of six (6) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. 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
r:\group\data\gsc\05L-537.doc

07-11-03

Date

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 #: 0360246

Initiator: John Lech
 Date: 7/1/03
 Client: TNU

Batch: 0307L537
 Samples: MS, MSD
 Method: SWB46/MCAVVV/CLP1

Parameter: 06CSC
 Matrix: Soil
 Prep Batch: 03LE0715

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)

ETM1 ETM decreased in ms+msd @ 44% + 46% limit 50%

2. Known or Probable Causes(s)

matrix effect.

3. Discussion and Proposed Action

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

Other Description:

NOTE: Biotic spike in control
 No h-Ts in samples @ 7 ± Reporting
 Limit.

[Handwritten Signature] 7/1/03

4. Project Manager Instructions...signature/date:

- 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:

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

Other Explanation:

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

Route Distribution of Completed SDR

- X Initiator
- X Lab General Manager: M. Taylor
- X Project Mgr: Stone/Johnson/Haslett
- X Technical Mgr: Wesson/Daniels
- X QA (file)
- Data Management: Feldman
- Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Layman
- Log-in: Melnic
- Admin: Soos
- Other: _____



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.
- .I** = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.

SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

GC SCAN

Report Date: 07/11/03 10:05

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1

	Cust ID:	B17122	B171B8	B171B8	B171B8	BLK	BLK BS
Sample	RFW#:	001	003	003 MS	003 MSD	03LE0715-MB1	03LE0715-MB1
Information	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

	fl	fl	fl	fl	fl	fl	fl
Methanol	28 U	28 U	94 %	119 %	25 U	96 %	
Ethyl Ether	28 U	28 U	44 * %	46 * %	25 U	54 %	
1-Butanol	28 U	28 U	94 %	92 %	25 U	91 %	

Handwritten signature

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



0305 L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford</u> <u>F03-006</u>	Refrigerator #	<u>1</u>	<u>2</u>
Est. Final Proj. Sampling Date	#/Type Container	Liquid	
Project # <u>11343-606-001-9999-00</u>		Solid	<u>10g</u>
Project Contact/Phone #	Volume	Liquid	
Lionville Laboratory Project Manager <u>Orlotta Johnson</u>		Solid	<u>60</u>
QC <u>SPEL</u> Del <u>SD</u> TAT <u>30 days</u>	Preservatives		
Date Rec'd <u>5.31.03/6.4.03</u> Date Due <u>7-4-03</u>	ANALYSES REQUESTED	ORGANIC: VOA, PAHs, PCB, Herb, Alcohols, Steroids, Pesticides, Chloro Herb., Rest. INORG: Metal, CN, Hex, Chrom, OIL+, Silica, NO2, NO3, Scand. Am., Ni3+/Ni2+, Cu2+, Pb, Cr(VI), Chrom.	

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only															
			MS	MSD				0624H	0625X	0626	0640	0665C	0608H	06B6X	06C10	ICE6	IOGGR	IONZ	INORG	IN3N2	IOGGR	ICRB	
	001	B17122	X	X	S	5.27.03	1110	X	X (w/MSD)	X (w/MSD)	X	X	X	X	X	X	X	X	X	X	X	X	X
	002	B171B7			S	5.29.03	1115				X	X											
	003	B171B8			S	5.29.03	1250	X	X (1/1260)	X (1/1260)	✓										✓	X	X

Special instructions: SAF # F03-006
Run Matrix QC (do not use -001)
 MET @: RCRA + Sb, Ba, Bi, B, Cu, Ni
 INORG @: IC - Cl, F, NO2, NO3, PO4, SO4, 2NH3N, LPH, ICNIO

DATE/REVISIONS:

6-5-03	1.	Per Client Add metals + amount to -003
	2.	
	3.	
	4.	
	5.	
	6.	

Lionville Laboratory Use Only

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

2) Ambient or Chilled
 3) Received in Good Condition or N
 4) Samples Properly Preserved or N
 5) Received Within Holding Time or N

Tamper Resistant Seal was:
 1) Present on Outer Package or N
 2) Unbroken on Outer Package or N
 3) Present on Sample or N
 4) Unbroken on Sample or N
 COC/Record Present Upon Sample Rec't or N
 Cooler Temp. 0.3 °C

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES: # 8393 5074 5238

Relinquished by	Received by	Date	Time
<u>DeVEx</u>	<u>D. Smith</u>	<u>5.31.03</u>	<u>11:35</u>
<u>DeVEx</u>	<u>D. Smith</u>	<u>6.4.03</u>	<u>09:25</u>

Relinquished by	Received by	Date	Time
<u>COMPOSITE WASTE</u>	<u>ORIGINAL REWRITTEN</u>		

7907 9895 7339 / 0.2 °C

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 <input type="checkbox"/>		
Ice Chest No. ERC 01-030	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express		
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Rec'd 5-27-03</i>	Offsite Property No. RSR 107192	Bill of Lading/Air Bill No. NA			

POSSIBLE SAMPLE HAZARDS/REMARKS <i>radiological Tie TO: B1710 to B1713, B1714</i>	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	gG	gG	gG	gG	gG	gG	gG	gG	gG	gG	gG
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
		Volume	60mL	125mL	60mL	60mL	125mL	60mL	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
	Add VOA 8260A									

Sample No.	Matrix *	Sample Date	Sample Time									
B1710	SOIL	5-27-03	1030	X	X	X	X	X	X	X		
B1713	SOIL	5-27-03	1030	X	X	X	X	X	X	X		
B1712 B1712a	SOIL	5-27-03	1110	X	X	X	X	X	X	X		

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix * S=Soil SE=Soilment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquids T=Times WL=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From <i>R. F. Hulstrom</i>	Date/Time 5/27/03 1415	Received By/Stored In <i>R. F. Hulstrom</i>	Date/Time 5-27-03 1415	** 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 (Gadolinium-154, Radium-226, Radium-228, Thorium-232); TOX URANIUM; Americium-241; Isotopic Phosphorus; Isotopic Uranium (6) Technetium-99; Strontium-90-90; Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129 Nickel-63; Neptunium-237			
Relinquished By/Removed From <i>R. F. Hulstrom</i>	Date/Time 5-27-03 1415	Received By/Stored In <i>LB</i>	Date/Time 5-27-03 1415				
Relinquished By/Removed From <i>LB</i>	Date/Time 5-27-03 1000	Received By/Stored In <i>R. F. Hulstrom</i>	Date/Time 5-30-03 1000				
Relinquished By/Removed From <i>R. F. Hulstrom</i>	Date/Time 5-30-03 1000	Received By/Stored In <i>Fed Ex</i>	Date/Time 5-30-03 1000				
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time 5-31-03 11:35	Received By/Stored In <i>J. V. Miller</i>	Date/Time 5-31-03 11:35				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				

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

10g Item's (2) + (4) per Steve Trent 6/4/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133	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-B-12 (C3246); (0.5')		SAF No. F03-006		Price Code 8N Data Turnaround 45 Days	
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express	
Shipped To KFCRA EBERLINE SERVICES (Formerly TMA) 6-202		Offsite Property No. A030 228		Bill of Lading/Air Bill No. SEE OSLC			
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie to B171N8 Special Handling and/or Storage COO/4e				Preservation		Cool 4C	Cool 4C
				Type of Container		aG	aG
				No. of Container(s)		1	1
				Volume		60mL	60mL
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151	TIED	
Sample No.	Matrix *	Sample Date	Sample Time				
B171B7	SOIL	5-29-03	1115	X	X		B171N8
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS	
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time	**The laboratory is to achieve a detection limit of 50.0 µg/g for Carbon 14. **The laboratory is to report both kerosene and diesel range compounds from WTPH.D analysis.	
<i>[Signature]</i>		5-29-03 1515	ERC <i>[Signature]</i>		5-29-03 1515		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
<i>[Signature]</i>		5-29-03 1515	I-B 3728 <i>[Signature]</i>		5-29-03 1515		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
I-B 3728		6-3-03 1000	R. Felle <i>[Signature]</i>		6-3-03 1000		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
<i>[Signature]</i>		6-3-03 1000	Fed Ex <i>[Signature]</i>				
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
<i>[Signature]</i>		6-4-03/0925	D. W. Smith <i>[Signature]</i>		6-4-03/0925		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time	Matrix *	
						S-Soil SO-Solid SL-Sludge W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WL-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					F03-006-134	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-B-12 (C3246); (14.5'-17')	SAF No. F03-006	Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02-402	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express					
Shipped To TMS-29-03 BERLINE SERVICES (Formerly TMA) Recra	Offsite Property No. A030-278	Bill of Lading/Air Bill No. SEE OSPC						
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TicTo B171N9 Special Handling and/or Storage Cool 4°C	Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None	
	Type of Container	aG	aG	aG	aG	aG	aG	
	No. of Container(s)	1	1	1	1	1	1	
	Volume	60mL	125mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time					
B171B8	SOIL	5-29-03	1750	X	X	X	B171N9	
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From M. Johnson	Date/Time 5-29-03	Received By/Stored In R. Feller	Date/Time 5-29-03	** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14.			Matrix * S=Soil SE=Soilment SO=Solid SL=Sludge W=Water O=Oil L=Liquid DS=Dry Solid PL=Plant T=Trace W=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From R. Feller	Date/Time 5-29-03	Received By/Stored In LB 3728	Date/Time 5-29-03	(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) 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 (4) Technetium-99, Strontium-89,90 - Total Sr, Isotopic Thorium (Thorium-232), Carbon-14, Iodine-129, Nickel-63, Neptunium-237				
Relinquished By/Removed From LB 3728	Date/Time 6-3-03	Received By/Stored In R. Feller	Date/Time 6-3-03					
Relinquished By/Removed From R. Feller	Date/Time 6-3-03	Received By/Stored In Fed Ex	Date/Time					
Relinquished By/Removed From Fed Ex	Date/Time 6-4-03/0925	Received By/Stored In D. Johnson	Date/Time 6-4-03/0925					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
LABORATORY SECTION	Received By	Title			Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time			

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

Client: TNU Hartford
Purchase Order/Project:

DATE: 5.31.03

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

Laboratory SDG #: 03056537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian: *[Signature]*
Laboratory Project Manager:

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

AGENT: TNU Handow

Purchase Order/Project:

DATE: 6-4-03

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

Laboratory SDG #:

0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-02-402 / 0.2°

Laboratory Sample Custodian:

Laboratory Project Manager:

[Handwritten Signature]

Lionville Laboratory, Inc.
 8015 ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17122	001	S	03LE0709	05/27/03	06/09/03	06/10/03
B171B8	003	S	03LE0709	05/29/03	06/09/03	06/10/03
B171B8	003 MS	S	03LE0709	05/29/03	06/09/03	06/10/03
B171B8	003 MSD	S	03LE0709	05/29/03	06/09/03	06/10/03

LAB QC:

BLK	MB1	S	03LE0709	N/A	06/09/03	06/10/03
BLK	MB1 BS	S	03LE0709	N/A	06/09/03	06/10/03



Handwritten signature/initials



Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L537
SDG/SAF#: H2250/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-31-03;06-04-03

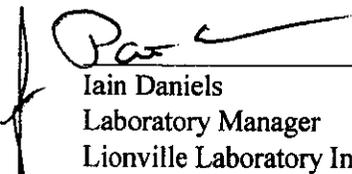
GC SCAN-Ethylene Glycol

The set of samples consisted of two (2) soil samples collected on 05-27,29-03.

The samples and their associated QC samples were prepped on 06-09-03 and analyzed on 06-10-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures. The extraction procedure was based on method 3580A (waste dilution -1 g into 5 mL water) and the extracts were analyzed 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 LVL'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. The blank spike recovery was 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
r:\group\data\gsc\05L-537a.doc

07-11-03
Date

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.



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.
- .I** = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.

SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015

Report Date: 07/11/03 09:40

RFW Batch Number: 0305L537

Client: TNUHANFORD F03-006 H2250 Work Order: 11343606001 Page: 1

5

	Cust ID:	B17122	B171B8	B171B8	B171B8	BLK	BLK BS
Sample	RFW#:	001	003	003 MS	003 MSD	03LE0709-MB1	03LE0709-MB1
Information	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
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Ethylene Glycol		28.0 U	23.5 U	83 %	107 %	25.0 U	98 %

7/11/03

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



0305L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A - F G I J B C D E H

Client <u>TNU-Hanford</u> <u>F03-006</u>	Refrigerator #	1							2										
Est. Final Proj. Sampling Date	#/Type Container	Liquid																	
Project # <u>11343-606-001-9999-00</u>		Solid	10g	10g		10g	10g	10g	10g	10g	10g	10g	10g	10g	10g	10g			
Project Contact/Phone #	Volume	Liquid																	
Lionville Laboratory Project Manager <u>Orlette Johnson</u>		Solid	60	120		60	60	60		60	60	60		60		60			
QC <u>SPEL</u> Del <u>SD</u> TAT <u>30 days</u>	Preservatives																		
Date Rec'd <u>5.31.03/64.03</u> Date Due <u>7.4.03</u> <u>6-30-03</u>	ANALYSES REQUESTED	ORGANIC						INORG											
		VOA	PAH	Pest/PCB	Herb	Alcohols	Chloro	Mercur	Cd	Metal	CN	Hex	Chrom	OLL+	NO ₂	NO ₃	ES/Am	As/Am	Se/Am

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only															
			MS	MSD				H24H	0125X	0200	0640	OGCS	0608H	0HBGX	MCTD	ICRL	IOGGR	IANZ	IANRW	IANZ	IOGGR	ICRB	
	001	B17122	X	X	S	5-27-03	1110	X	X (W/MSD)	X (W/MSD)	X		X	X	X	X							
	002	B171B7				5-29-03	1115				X	X											
	003	B171B8				5-29-03	1250		X (1/12/03)	X (1/12/03)	✓										X	X	

Special Instructions: SAF # F03-006
 Run Matrix QC (do not use 001) ^{SA}/_{MS}
 MCTD = RCRA + Sb, Be, Bi, B, Cu, Ni
 ZNORG = IC - Cl, F, NO₂, NO₃, PO₄, SO₄, ZNH3N, LPH, ICMTD

DATE/REVISIONS:
 6-5-03 1. Per Client Add metals + organics to - 003
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

Lionville Laboratory Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC/Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>0.3</u> °C
2) Ambient or <u>Chilled</u> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	5-31-03	11:35
<u>[Signature]</u>	<u>[Signature]</u>	6-4-03	09:25

Relinquished by	Received by	Date	Time
<u>COMPOSITE WASTE</u>	<u>ORIGINAL REWRITTEN</u>		

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES: # 839,35074 5238

7907 9893 7339 / 0.2 °C

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 <input type="checkbox"/>		
Ice Chest No. ERC 01-030	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express		

Shipped To MVS 5-27-03
EBERLING SERVICES (Formerly TMA) Beauregard

Offsite Property No. RSR 107192

Bill of Lading/Air Bill No. NA

POSSIBLE SAMPLE HAZARDS/REMARKS <u>radiological Tie TO: B71123, B71124</u> <u>Special Handling and/or Storage (B71123, B71124)</u>	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 - HD
	<u>Add VOA below</u>	<u>See item (2) in Special Instructions.</u>				<u>See item (4) in Special Instructions.</u>				

Sample No.	Matrix *	Sample Date	Sample Time								
<u>B71116</u>	<u>SOIL</u>	<u>5-27-03</u>	<u>1030</u>	X	X	X	X	X	X	X	
<u>B71123</u>	<u>SOIL</u>	<u>5-27-03</u>	<u>1030</u>	X	X	X	X	X	X	X	<u>MVS 5-27-03</u>
<u>B71122</u>	<u>SOIL</u>	<u>5-27-03</u>	<u>1110</u>	X	X	X	X	X	X	X	<u>MVS 5-27-03</u>

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From <u>M. Hulstrom</u>	Date/Time <u>5/27/03 1415</u>	Received By/Stored In <u>R. G. Hulstrom</u>	Date/Time <u>5-27-03 1415</u>
Relinquished By/Removed From <u>R. G. Hulstrom</u>	Date/Time <u>5-27-03 1415</u>	Received By/Stored In <u>IB</u>	Date/Time <u>3728 1415</u>
Relinquished By/Removed From <u>IB</u>	Date/Time <u>5-30-03 1000</u>	Received By/Stored In <u>R. G. Hulstrom</u>	Date/Time <u>5-30-03 1000</u>
Relinquished By/Removed From <u>R. G. Hulstrom</u>	Date/Time <u>5-30-03 1000</u>	Received By/Stored In <u>FEAL EX</u>	Date/Time <u>5-30-03 1000</u>
Relinquished By/Removed From <u>FEAL EX</u>	Date/Time <u>5-31-03 11:35</u>	Received By/Stored In <u>J. V. Miller</u>	Date/Time <u>5-31-03 11:35</u>

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, Thorium-232); 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=Soilment
- SO=Soil
- SL=Sludge
- W=Water
- O=Oil
- A=Air
- DS=Drum Solids
- DL=Drum Liquids
- T=Time
- WJ=Wipe
- L=Liquid
- V=Vegetation
- X=Other

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

10g Item's (2) + (4) per Streetment
or 6/4/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133		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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days														
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express																
Shipped To KFCRA EDERLINE SERVICES (Formerly TMA) 6-302		Offsite Property No. A030 228		Bill of Lading/Air Bill No. SEE OSPC																		
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie to B171N8 Special Handling and/or Storage COOL/C				Preservation		Cool 4C	Cool 4C															
				Type of Container		aG	aG															
				No. of Container(s)		1	1															
				Volume		60mL	60mL															
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151																	
Sample No.	Matrix *	Sample Date	Sample Time																			
B171B7	SOIL	5-29-03	1115	X	X																	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *														
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		**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 WTRH.D analysis.				7TMS S-2103 SO-Solid SL-Sludge W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WL-Wipe L-Liquid V-Vegetation X-Other										
XXXXXXXXXX		5-29-03 1515		ERC R. F. Hill		5-29-03 1515																
R. F. Hill		5-29-03 1515		I. B. 3728		5-29-03 1515																
I. B. 3728		6-3-03 1000		R. F. Hill		6-3-03 1000																
R. F. Hill		6-3-03 1000		Fed Ex																		
Fed Ex		6-4-03/0925		D. J. Smith		6-4-03/0925																
LABORATORY SECTION		Received By		Title				Date/Time														
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time														

VMS Gamma Spectroscopy Report generated 2-JUN-2003 10:18:42

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP RCF11059 DET1 50GRAMPILLBOX60
 Sample ID : B171N8 Project Number : 216-B-12
 RFC Number : RCF11059 SAF Number : F03-006
 Sample Quantity : 3.10000E+01 GRAMS
 Sample Type : Soil Sample Geometry :
 Sample Date : 29-MAY-2003 11:15:00 Acquisition date : 2-JUN-2003 09:18:26.
 Decay time : 3 22:03:26.08 % dead time : 0.0%
 Elapsed live time : 0 01:00:00.00 Elapsed real time : 0 01:00:00.11
 Energy cal. time : 14-FEB-2002 16:05:03 Effic. cal. time : 4-APR-2002 08:08:29.
 Detector name : BEGE 3820 Counting geometry: 50Gram pill box
 Peak Sensitivity : 3.00000
 Efficiency Type : EMPIRICA Energy tolerance: 2.00000

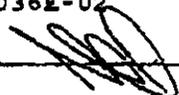
Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	1.820E+01	6.398E+00	3.788E+00	3.759E-01	4.806
CD-109 ^{Pa224}	1.728E+00 6/2/03	2.286E+00	→ 1.554E+00	1.882E-01	1.112

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-60	1.624E-01		2.710E-01	6.255E-01	6.059E-02	0.260
AG-108m	-1.930E-01		2.036E-01	3.099E-01	3.796E-02	-0.623
CS-137	1.540E-01		1.983E-01	4.356E-01	4.971E-02	0.354
EU-152	-7.433E-02		1.644E-01	2.812E-01	4.479E-02	-0.264
EU-154	-3.233E-02		1.138E-01	2.001E-01	2.908E-02	-0.162
EU-155	1.888E-01	+	1.404E-01	2.510E-01	2.935E-02	0.752
RA-226	7.103E-01		1.860E+00	3.642E+00	3.251E-01	0.195
AC-228	6.053E-01		1.461E+00	3.034E+00	3.263E-01	0.200
TH-234	7.788E-01		9.947E-01	1.828E+00	7.698E-01	0.426
U-235	5.320E-02		1.056E-01	2.097E-01	2.035E-02	0.254
AM-241	3.036E-02		1.019E-01	1.919E-01	2.674E-02	0.158

Approved by: 

Approval Date: 6 / 2 / 03

TIMOTHY J. SNIDER

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-134	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-B-12 (C3246); (14.5'-17')		SAF No. F03-006		Price Code 8N Data Turnaround 45 Days				
Ice Chest No. ERC 02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA) Recra		Offsite Property No. A030-278		Bill of Lading/Air Bill No. SEE OSPC						
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIC TO B171N9 Special Handling and/or Storage Cool 4°C				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
				Type of Container	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3	
Sample No.	Matrix *	Sample Date	Sample Time							
B171B8	SOIL	5-29-03	1750	X	X	X	✓			TIC TO: B171N9
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From <i>R. Felder</i>		Date/Time 5-29-03 1515		Received By/Stored In <i>R. Felder</i>		Date/Time 5-29-03 1515		** 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) 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 (4) Technetium-99; Strontium-90,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237		
Relinquished By/Removed From <i>R. Felder</i>		Date/Time 5-29-03 1515		Received By/Stored In <i>LB 3728</i>		Date/Time 5-29-03 1515				
Relinquished By/Removed From <i>LB 3728</i>		Date/Time 6-3-03 1000		Received By/Stored In <i>R. Felder</i>		Date/Time 6-3-03 1000				
Relinquished By/Removed From <i>R. Felder</i>		Date/Time 6-3-03 1000		Received By/Stored In <i>Fed Ex</i>		Date/Time				
Relinquished By/Removed From <i>R. Felder</i>		Date/Time 6-4-03/0925		Received By/Stored In <i>J. Miller</i>		Date/Time 6-4-03/0925				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drydown Solid PL=Plant T=Trace W=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 Hartford
Purchase Order/Project:

DATE: 5-31-03

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

Laboratory SDG #:

03056537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: TNU Hardwood
Purchase Order/Project:

DATE: 6-4-03

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

Laboratory SDG #: 0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-02-402 / 0.2°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250



DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17122						
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
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
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

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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

B171B8

SILVER, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
ARSENIC, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
BORON, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
BARIUM, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
BERYLLIUM, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
BISMUTH, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
CADMIUM, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
CHROMIUM, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
COPPER, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
MERCURY, TOTAL	003	S	03C0143	05/29/03	06/12/03	06/12/03
MERCURY, TOTAL	003 REP	S	03C0143	05/29/03	06/12/03	06/12/03
MERCURY, TOTAL	003 MS	S	03C0145	05/29/03	06/13/03	06/13/03
NICKEL, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
LEAD, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
ANTIMONY, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03
SELENIUM, TOTAL	003	S	03L0344	05/29/03	06/17/03	06/18/03

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 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

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
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
SILVER LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
SILVER, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
ARSENIC LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
ARSENIC, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
BORON LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
BORON, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
BARIUM LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
BARIUM, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
BERYLLIUM, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
BISMUTH, LCS	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
BISMUTH, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
CADMIUM LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
CADMIUM, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
CHROMIUM LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
CHROMIUM, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
COPPER LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
COPPER, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
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	03L0344	N/A	06/17/03	06/18/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03

LVL LOT # :0305L537

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
LEAD LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
LEAD, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
ANTIMONY LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
ANTIMONY, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03
SELENIUM LABORATORY	LC1 BS	S	03L0344	N/A	06/17/03	06/18/03
SELENIUM, TOTAL	MB1	S	03L0344	N/A	06/17/03	06/18/03



Analytical Report

Client: TNU-HANFORD F03-006
LVL#: 0305L537
SDG/SAF#: H2250/F03-006

W.O.#: 11343-606-001-9999-00
Dates Received: 05-31/06-04-03

METALS CASE NARRATIVE

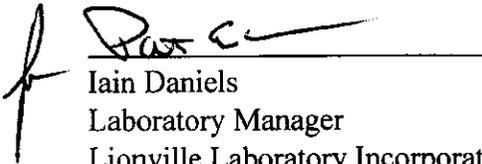
1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's 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 with the exception of 03L0344-LC1 for Bismuth, which was not spiked. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recovery for 1 analyte was 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 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 18 pages.

05

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
B17122	Antimony	100	102.1

12. The duplicate analyses for 4 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
 jjw/m05-537

06-27-03
 Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Lot#: 0305L537

Leaching Procedure: 1310 1311 1312 Other: _____

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050B 3051 200.7 SS17
 Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Antimony	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7041 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 204.2			<input type="checkbox"/> 99
Arsenic	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7060A ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 206.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Barium	<input checked="" type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Beryllium	<input checked="" type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Bismuth	<input checked="" type="checkbox"/> 6010B ¹	<input type="checkbox"/> 200.7 ¹		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Boron	<input checked="" type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Cadmium	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7131A ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 213.2			<input type="checkbox"/> 99
Calcium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Chromium	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7191 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 218.2			<input type="checkbox"/> SS17
Cobalt	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Copper	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7211 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 220.2			<input type="checkbox"/> 99
Iron	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Lead	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7421 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 239.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Lithium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7430 ⁴	<input type="checkbox"/> 200.7		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Magnesium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Manganese	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Mercury	<input type="checkbox"/> 7470A ³ <input checked="" type="checkbox"/> 7471A ³	<input type="checkbox"/> 245.1 ² <input type="checkbox"/> 245.5 ²			<input type="checkbox"/> 99
Molybdenum	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Nickel	<input checked="" type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Potassium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7610 ⁴	<input type="checkbox"/> 200.7 <input type="checkbox"/> 258.1 ⁴			<input type="checkbox"/> 99
Rare Earths	<input type="checkbox"/> 6010B ¹	<input type="checkbox"/> 200.7 ¹		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Selenium	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7740 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 270.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Silicon	<input type="checkbox"/> 6010B ¹	<input type="checkbox"/> 200.7		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Silica	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Silver	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7761 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 272.2			<input type="checkbox"/> 99
Sodium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7770 ⁴	<input type="checkbox"/> 200.7 <input type="checkbox"/> 273.1 ⁴			<input type="checkbox"/> 99
Strontium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Thallium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7841 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 279.2 <input type="checkbox"/> 200.9			<input type="checkbox"/> 99
Tin	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Titanium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Uranium	<input type="checkbox"/> 6010B ¹	<input type="checkbox"/> 200.7 ¹		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Vanadium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Zinc	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Zirconium	<input type="checkbox"/> 6010B ¹	<input type="checkbox"/> 200.7 ¹		<input type="checkbox"/> 1620	<input type="checkbox"/> 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 06/25/03

CLIENT: TNUHANFORD P03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17122	Silver, Total	0.13 u	MG/KG	0.13	1.0
		Arsenic, Total	4.8	MG/KG	0.37	1.0
		Boron, Total	0.83	MG/KG	0.21	1.0
		Barium, Total	18.0	MG/KG	0.02	1.0
		Beryllium, Total	0.04	MG/KG	0.01	1.0
		Bismuth, Total	0.57 u	MG/KG	0.57	1.0
		Cadmium, Total	0.12	MG/KG	0.04	1.0
		Chromium, Total	8.5	MG/KG	0.11	1.0
		Copper, Total	4.6	MG/KG	0.07	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Nickel, Total	5.4	MG/KG	0.14	1.0
		Lead, Total	2.8	MG/KG	0.26	1.0
		Antimony, Total	0.35	MG/KG	0.25	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
-003	B17188	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	7.3	MG/KG	0.29	1.0
		Boron, Total	1.3	MG/KG	0.17	1.0
		Barium, Total	82.3	MG/KG	0.02	1.0
		Beryllium, Total	0.33	MG/KG	0.009	1.0
		Bismuth, Total	0.45 u	MG/KG	0.45	1.0
		Cadmium, Total	0.08	MG/KG	0.04	1.0
		Chromium, Total	7.1	MG/KG	0.09	1.0
		Copper, Total	14.1	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.5	MG/KG	0.11	1.0
		Lead, Total	6.1	MG/KG	0.20	1.0
		Antimony, Total	0.38	MG/KG	0.19	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/25/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

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
BLANK1	03L0344-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	0.23	MG/KG	0.19	1.0
		Barium, Total	0.16	MG/KG	0.02	1.0
		Beryllium, Total	0.02	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	0.10 u	MG/KG	0.10	1.0
		Copper, Total	0.06 u	MG/KG	0.06	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.28	MG/KG	0.23	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
BLANK1	03C0145-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/25/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B17122	Silver, Total	5.3	0.13u	5.6	94.6	1.0
		Arsenic, Total	212	4.8	225	91.9	1.0
		Boron, Total	104	0.83	113	91.7	1.0
		Barium, Total	232	18.0	225	95.2	1.0
		Beryllium, Total	5.2	0.04	5.6	92.2	1.0
		Bismuth, Total	529	0.57u	563	93.9	1.0
		Cadmium, Total	5.3	0.12	5.6	92.5	1.0
		Chromium, Total	30.1	8.5	22.5	96.0	1.0
		Copper, Total	32.4	4.6	28.2	98.6	1.0
		Nickel, Total	58.4	5.4	56.3	94.1	1.0
		Lead, Total	55.0	2.8	56.3	92.7	1.0
		Antimony, Total	32.7	0.35	56.3	57.5	1.0
		Selenium, Total	197	0.47u	225	87.3	1.0
-003	B171B8	Mercury, Total	0.18	0.02u	0.17	106.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/25/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	B17122	Silver, Total	0.13u	0.13u	NC	1.0
		Arsenic, Total	4.8	4.3	11.0	1.0
		Boron, Total	0.83	0.67	20.7	1.0
		Barium, Total	18.0	16.3	9.9	1.0
		Beryllium, Total	0.04	0.07	63.0	1.0
		Bismuth, Total	0.57u	0.56u	NC	1.0
		Cadmium, Total	0.12	0.06	68.3	1.0
		Chromium, Total	8.5	8.2	3.6	1.0
		Copper, Total	4.6	4.4	4.4	1.0
		Nickel, Total	5.4	4.6	16.0	1.0
		Lead, Total	2.8	2.6	7.4	1.0
		Antimony, Total	0.35	0.26	32.6	1.0
		Selenium, Total	0.47u	0.46u	NC	1.0
-003REP	B171B8	Mercury, Total	0.02u	0.02u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/25/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
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
LCS1	03L0344-LC1	Silver, LCS	46.3	50.0	MG/KG	92.6
		Arsenic, LCS	883	1000	MG/KG	88.3
		Boron, LCS	442	500	MG/KG	88.4
		Barium, LCS	479	500	MG/KG	95.8
		Beryllium, LCS	22.7	25.0	MG/KG	90.8
		Bismuth, LCS	-1.	25.0	MG/KG	-5.6
		Cadmium, LCS	23.2	25.0	MG/KG	92.8
		Chromium, LCS	47.8	50.0	MG/KG	95.6
		Copper, LCS	121	125	MG/KG	96.6
		Nickel, LCS	189	200	MG/KG	94.4
		Lead, LCS	232	250	MG/KG	92.8
		Antimony, LCS	272	300	MG/KG	90.7
		Selenium, LCS	843	1000	MG/KG	84.3
LCS1	03C0145-LC1	Mercury, LCS	5.6	6.2	MG/KG	89.6



0305 L537

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A - F G I J B C D E H

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	1	2																					
Est. Final Proj. Sampling Date	#/Type Container	Liquid																						
Project # <u>11343-606-001-9999-00</u>		Solid	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
Project Contact/Phone #	Volume	Liquid																						
Lionville Laboratory Project Manager <u>Orlette Johnson</u>		Solid	60	120	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60				
QC <u>SPEL</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Date Rec'd <u>5.31.03/6.4.03</u> Date Due <u>7.4.03</u>	ANALYSES REQUESTED	ORGANIC										INORG												
		VOA	PAHs	Pest/PCB	Herb	Alcohols	Sugars	Phenols	Pest	Chloro	Heavy	Metal	CN	Hex	Chrom	Oil +	Silicates	NO ₂	NO ₃	IC Anion	Am.	NO ₂ /NO ₃	NO ₂ +	NO ₃ +

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																	
			MS	MSD				0624H	0625X	0626	0620	0620	0620	0620	0620	0620	0620	0620	0620	0620					
			MS	MSD				0624H	0625X	0626	0620	0620	0620	0620	0620	0620	0620	0620	0620	0620					
	001	B17122	X	X	S	5.27.03	1110	X	X (w/mats)	X (w/Vol)	X		X	X	X	X	X	X							
	002	B171B7				5.29.03	1115				X	X													
	003	B171B8				5.29.03	1250	X	X (1/125ml)	X (1/100ml)	✓										✓	X	X		

Special Instructions: SAF # F03-006
 Run Matrix QC (do not use 001) ^{SA} _{MSD}
 MCTO: RCRA + Sb, Be, Bi, B, Cu, Ni
 INORG: IC - Cl, F, NO₂, NO₃, PO₄, SO₄, I, NH₃, LPH, ICMSO

DATE/REVISIONS:
 6-5-03 1. Per Client Add metals + anions to - 003
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

Lionville Laboratory Use Only	
Samples were; 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC/Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>0.3</u> °C
2) Ambient or <u>Chilled</u> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Property Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time
<u>Steve</u>	<u>D. Smith</u>	5-31-03	11:35
<u>Steve</u>	<u>D. Smith</u>	6-4-03	09:25

Relinquished by	Received by	Date	Time
<u>COMPOSITE WASTE</u>	<u>ORIGINAL</u>		
	<u>REWRITTEN</u>		

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES: # 839.3 5074 5238

7907 9893 7339 / 0.2 °C

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 01-030
 Field Logbook No.: HNF-N-3361 COA: 117504ES10
 Method of Shipment: Federal Express
 Shipped To: EBERLINE SERVICES (Formerly TMA) *Beera et al*
 Offsite Property No.: RSR 107192
 Bill of Lading/Air Bill No.: NA

POSSIBLE SAMPLE HAZARDS/REMARKS <i>ms 5-27-03</i> <i>radiological tie to: B7116 to ms 5-27-03 (B7116, B7123)</i>	Special Handling and/or Storage <i>N/A</i>	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	aG
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
		Volume	60mL	125mL	60mL	60mL	125mL	60mL	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										
<i>B7146</i>	<i>SOIL</i>	<i>5-27-03</i>	<i>1030</i>	X	X	X	X	X	X	X			
<i>B7123</i>	<i>SOIL</i>	<i>5-27-03</i>	<i>1030</i>	X	X	X	X	X	X	X			
<i>B7122</i>	<i>SOIL</i>	<i>5-27-03</i>	<i>1110</i>	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
<i>[Signature]</i>	<i>5/27/03 1415</i>	<i>R. G. ...</i>	<i>5-27-03 1415</i>
<i>[Signature]</i>	<i>5/27/03 145</i>	<i>[Signature]</i>	<i>5/27/03 1415</i>
<i>[Signature]</i>	<i>5/27/03 1000</i>	<i>[Signature]</i>	<i>5/27/03 1000</i>
<i>[Signature]</i>	<i>5/27/03 1000</i>	<i>[Signature]</i>	<i>5/27/03 1000</i>
<i>[Signature]</i>	<i>5/31/03 11:35</i>	<i>[Signature]</i>	<i>5/31/03 11:35</i>

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.

- Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
- Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
- 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)
- IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
- Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-159); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Th-232); Total Uranium, Americium-241; Isotopic Plutonium; Isotopic Uranium
- Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129

Mickel-63; Neptunium-237

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

10g Item's (2) + (4) per Steve Trent on 6/4/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-133	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-B-12 (C3246); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC-02-402		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To RECRA EBERLINE SERVICES (Formerly TMA) 6-302		Offsite Property No. A 030 278				Bill of Lading/Air Bill No. SEE OSPL			
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie To B171N8 Special Handling and/or Storage COO/4c			Preservation	Cool 4C	Cool 4C				
			Type of Container	aG	aG				
			No. of Container(s)	1	1				
			Volume	60mL	60mL				
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EP8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B171B7	SOIL	5-29-03	1115	X	X			FIELD	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS		Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
MANAGEMENT		5-29-03 1515		ERC		5-29-03 1515			
RECRA		5-29-03 1515		R. FALLON		5-29-03 1515			
L.B. 3728		6-3-03 1000		R. FALLON		6-3-03 1000			
RECRA		6-3-03 1000		Fed Ex					
RECRA		6-4-03/0925		D. W. Smith		6-4-03/0925			
LABORATORY SECTION		Received By		Title		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

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-B-12 (C3246); (14.5'-17') SAF No.: F03-006 Air Quality:

Ice Chest No.: ERC 02-402 Field Logbook No.: HNF-N-3361 COA: 117504ES10 Method of Shipment: Federal Express

Shipped To: TMS-29-03 Recra (Formerly TMA) EBERLINE SERVICES Offsite Property No.: A030-278 Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie To B171N9 Special Handling and/or Storage Cool 4°C	Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1
	Volume	60mL	125mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3

Sample No.	Matrix *	Sample Date	Sample Time						
B171B8	SOIL	5-29-03	1250	X	X	X	✓		B171N9

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From <i>Johansen</i>	Date/Time 5-29-03 1515	Received By/Stored In <i>R. Fellen</i>	Date/Time 5-29-03 1515
Relinquished By/Removed From <i>R. Fellen</i>	Date/Time 5-29-03 1515	Received By/Stored In <i>LB</i>	Date/Time 5-29-03 1515
Relinquished By/Removed From <i>LB</i>	Date/Time 6-3-03 1000	Received By/Stored In <i>R. Fellen</i>	Date/Time 6-3-03 1000
Relinquished By/Removed From <i>R. Fellen</i>	Date/Time 6-3-03 1000	Received By/Stored In <i>Red Ex</i>	Date/Time
Relinquished By/Removed From <i>Red Ex</i>	Date/Time 6-4-03/0925	Received By/Stored In <i>J. Miller</i>	Date/Time 6-4-03/0925

SPECIAL INSTRUCTIONS

** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. *TMS-29-03*

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

Matrix *

S=Soil
SE=Soilment
SO=Solid
St=Sludge
W=Water
O=Oil
A=Air
DS=Dry Solid
PL=Plant
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 Hornford*
Purchase Order/Project:

DATE: *5.31.03*

FW# / SOW# / Release #: *F03-006*

Laboratory SDG #: *03056537*

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian:

D. Smith

Laboratory Project Manager:



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03 and 05/31/03

LVL LOT # :0305L537

CLIENT ID /ANALYSIS LVL # MTX PREP # COLLECTION EXTR/PREP ANALYSIS

B17122

% SOLIDS	001	S	03L&S079	05/27/03	06/09/03	06/10/03
% SOLIDS	001 REP	S	03L&S079	05/27/03	06/09/03	06/10/03
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	03LICB38	05/27/03	06/12/03	06/12/03
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	03LICB38	05/27/03	06/12/03	06/12/03
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	03LICB38	05/27/03	06/12/03	06/12/03
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	03LICB38	05/27/03	06/12/03	06/12/03
TOTAL CYANIDE	001	S	03LCA53	05/27/03	06/07/03	06/07/03
TOTAL CYANIDE	001 REP	S	03LCA53	05/27/03	06/07/03	06/07/03
TOTAL CYANIDE	001 MS	S	03LCA53	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	03LICB38	05/27/03	06/12/03	06/12/03
CHROMIUM VI	001	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	03LICB38	05/27/03	06/12/03	06/12/03
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
OIL & GREASE BY GRAV	001	S	03LOG028	05/27/03	06/24/03	06/26/03
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

B171B7

% SOLIDS	002	S	03L&S079	05/29/03	06/09/03	06/10/03
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Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2250

DATE RECEIVED: 06/04/03 and 05/31/03

LVL LOT # :0305L537

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B171B8						
% SOLIDS	003	S	03L&S079	05/29/03	06/09/03	06/10/03
CHLORIDE BY IC	003	S	03LICB38	05/29/03	06/12/03	06/12/03
FLUORIDE BY IC	003	S	03LICB38	05/29/03	06/12/03	06/12/03
NITRITE BY IC	003	S	03LICB38	05/29/03	06/12/03	06/12/03
NITRATE BY IC	003	S	03LICB38	05/29/03	06/12/03	06/12/03
TOTAL CYANIDE	003	S	03LC054	05/29/03	06/11/03	06/11/03
PHOSPHATE BY IC	003	S	03LICB38	05/29/03	06/12/03	06/12/03
CHROMIUM VI	003	S	03LVI048	05/29/03	06/12/03	06/12/03
CHROMIUM VI	003 REP	S	03LVI048	05/29/03	06/12/03	06/12/03
CHROMIUM VI	003 MS	S	03LVI048	05/29/03	06/12/03	06/12/03
CHROMIUM VI	003 MSD	S	03LVI048	05/29/03	06/12/03	06/12/03
SULFATE BY IC	003	S	03LICB38	05/29/03	06/12/03	06/12/03
NITRATE NITRITE	003	S	03LN3A30	05/29/03	06/16/03	06/16/03
AMMONIA	003	S	03LAMA15	05/29/03	06/10/03	06/10/03
AMMONIA	003 REP	S	03LAMA15	05/29/03	06/10/03	06/10/03
AMMONIA	003 MS	S	03LAMA15	05/29/03	06/10/03	06/10/03
OIL & GREASE BY GRAV	003	S	03LOG028	05/29/03	06/24/03	06/26/03
OIL AND GREASE BY GR	003 REP	S	03LOG028	05/29/03	06/24/03	06/26/03
OIL AND GREASE BY GR	003 MS	S	03LOG028	05/29/03	06/24/03	06/26/03
PH	003	S	03LPH039	05/29/03	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	03LCA53	N/A	06/07/03	06/07/03
TOTAL CYANIDE	LCS L	S	03LCA53	N/A	06/07/03	06/07/03
TOTAL CYANIDE	MB1	S	03LCA53	N/A	06/07/03	06/07/03
PHOSPHATE BY IC	MB1	S	03LICB38	N/A	06/12/03	06/12/03



Analytical Report

Client: TNU-HANFORD F03-006 H2250
LVL#: 0305L537

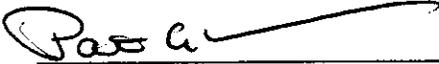
W.O.#: 11343-606-001-9999-00
Date Received: 05-31-03;06-04-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.
2. The samples were prepared and analyzed in accordance with the methods 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, Sulfate, Nitrate Nitrite, Chromium VI, 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, Sulfate, Nitrate Nitrite, pH, Chromium VI, Ammonia and Oil and Grease were within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.

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 18 pages.

10. The result for Oil and Grease sample B17122 may be biased high as the resultant residue from the freon extraction did not reach dryness at 70°C as suggested by the method and despite additional nitrogen sweeps, gentle heating and desiccation time.
11. 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

njp/05-537

07-08-03
Date



Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% 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 352.3	

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 06/26/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
-001	B17122	% Solids	85.4	%	0.01	1.0
		Chloride by IC	1.5	u MG/KG	1.5	1.0
		Fluoride by IC	1.5	u MG/KG	1.5	1.0
		Nitrite by IC	1.46	u MG/KG	1.46	1.0
		Nitrate by IC	1.46	u MG/KG	1.46	1.0
		Cyanide, Total	0.53	u MG/KG	0.53	1.0
		Phosphate by IC	2.8	MG/KG	1.5	1.0
		Chromium VI	0.47	u MG/KG	0.47	1.0
		Sulfate by IC	7.1	MG/KG	1.5	1.0
		Nitrate Nitrite	0.23	u MG/KG	0.23	1.0
		Ammonia, as N	6.9	u MG/KG	6.9	1.0
		Oil & Grease Gravimetri	59400	MG/KG	780	1.0
		pH	5.5	SOIL PH	0.01	1.0
-002	B171B7	% Solids	94.5	%	0.01	1.0
-003	B171B8	% Solids	95.0	%	0.01	1.0
		Chloride by IC	7.3	MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.32	u MG/KG	1.32	1.0
		Nitrate by IC	57.8	MG/KG	2.64	2.0
		Cyanide, Total	0.48	u MG/KG	0.48	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Chromium VI	0.42	u MG/KG	0.42	1.0
		Sulfate by IC	467	MG/KG	26.4	20.0
		Nitrate Nitrite	16.2	MG/KG	1.0	5.0
		Ammonia, as N	6.5	u MG/KG	6.5	1.0
		Oil & Grease Gravimetri	702	u MG/KG	702	1.0
		pH	9.1	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/26/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

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	03LCA53-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	03LOG028-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0
BLANK1	03LC054-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/26/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B17122	Chloride by IC	30.1	0.76	29.3	100.3	1.0
		Fluoride by IC	29.7	0.0	29.3	101.6	1.0
		Nitrite by IC	30.5	1.46u	29.3	104.1	1.0
		Nitrate by IC	30.0	1.46u	29.3	102.6	1.0
		Cyanide, Total	5.37	0.53u	5.48	98.0	1.0
		Phosphate by IC	32.4	2.8	29.3	101.1	1.0
		Sulfate by IC	37.1	7.1	29.3	102.4	1.0
		Nitrate Nitrite	6.0	0.23u	6.0	100	1.0
-003	B171B8	Soluble Chromium VI	4.2	0.42u	4.2	92.2	1.0
		Insoluble Chromium VI	1180	0.42u	1350	87.4	100
		Ammonia, as N	250	6.5 u	261	96.0	1.0
		Oil & Grease Gravimetr	8050	702 u	7990	100.7	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	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	03LNJA30-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	03LOG028-MB1	Oil & Grease Gravimetr	7450	667 u	7590	98.2	1.0
		Oil & Grease - Grav M	7520	667 u	7590	99.1	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 06/26/03

CLIENT: TNUHANFORD P03-006 H2250
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	03LAMA15-MB1	Ammonia, as N	97.5	104.2	6.7
BLANK10	03LOG028-MB1	Oil & Grease - Grav	98.2	99.1	0.89

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/26/03

CLIENT: TNUHANFORD P03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	B17122	% Solids	85.4	85.5	0.11	1.0
		Chloride by IC	1.5 u	1.5 u	NC	1.0
		Fluoride by IC	1.5 u	1.5 u	NC	1.0
		Nitrite by IC	1.46u	1.46u	NC	1.0
		Nitrate by IC	1.46u	1.46u	NC	1.0
		Cyanide, Total	0.53u	0.58u	NC	1.0
		Phosphate by IC	2.8	2.5	10.1	1.0
		Sulfate by IC	7.1	6.9	2.5	1.0
		Nitrate Nitrite	0.23u	0.22u	NC	1.0
		pH	5.5	5.5	0.2	1.0
-003REP	B171B8	Chromium VI	0.42u	0.42u	NC	1.0
		Ammonia, as N	6.5 u	6.5 u	NC	1.0
		Oil & Grease Gravimetri	702 u	702 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/26/03

CLIENT: TNUHANFORD F03-006 H2250
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L537

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LCA53-LCS1	Cyanide, Total LCS	1.90	2.0	MG/KG	94.9
LCSS2	03LCA53-LCS2	Cyanide, Total LCS	10.2	10.0	MG/KG	101.7
LCSS1	03LC054-LCS1	Cyanide, Total LCS	1.95	2.0	MG/KG	97.4
LCSS2	03LC054-LCS2	Cyanide, Total LCS	10.3	10.0	MG/KG	102.6

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 <input type="checkbox"/>				
Ice Chest No. ERC 01-030	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express				
Shipped To MS-27-03 EDERLINE SERVICES (Formerly TMA) <i>Becca et al</i>	Offsite Property No. RSR 107192	Bill of Lading/Air Bill No. NA					

POSSIBLE SAMPLE HAZARDS/REMARKS <i>ms 5-27-03</i> radiological Tie TO: B7110 <i>(B7110, B7122)</i> Special Handling and/or Storage <i>N/A</i>	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. <i>Add VOA 8260A</i>	See item (2) in Special Instructions. <i>0.300</i>	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions. <i>Q/L</i>	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3
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Sample No.	Matrix *	Sample Date	Sample Time								
B7116	SOIL	5-27-03	1030	X	X	X	X	X	X	X	
B7123	SOIL	5-27-03	1030	X	X	X	X	X	X	X	<i>ms 5-27-03</i>
B7122	SOIL	5-27-03	1110	X	X	X	X	X	X	X	<i>ms 5-27-03</i>

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From <i>MS-27-03</i>	Date/Time <i>5/27/03 1415</i>	Received By/Stored In <i>ERC</i>	Date/Time <i>5-27-03 1415</i>
Relinquished By/Removed From <i>R. G. COO</i>	Date/Time <i>5-27-03 1415</i>	Received By/Stored In <i>IB</i>	Date/Time <i>3728 1417</i>
Relinquished By/Removed From <i>IB</i>	Date/Time <i>5-30-03 1000</i>	Received By/Stored In <i>R. G. COO</i>	Date/Time <i>5-30-03 1000</i>
Relinquished By/Removed From <i>R. G. COO</i>	Date/Time <i>5-30-03 1000</i>	Received By/Stored In <i>FEAL EX</i>	Date/Time <i>5-30-03 11:35</i>
Relinquished By/Removed From <i>FEAL EX</i>	Date/Time <i>5-31-03 11:35</i>	Received By/Stored In <i>MS-27-03</i>	Date/Time <i>5-31-03 11:35</i>

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, Rubidium-226, Radium-228, Th-126); Total Uranium, Americium-241; Isotopic Phosphorus; 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=Soil/Sediment
 SQ=Solid
 SL=Sludge
 W=Water
 O=Oil
 A=Air
 DS=Dry Solids
 DL=Dry Liquids
 T=Trace
 W=Wipe
 L=Liquid
 V=Vegetation
 X=Other

LABORATORY SECTION	Received By <i>MS-27-03</i>	Title <i>10g Items (2) + (4) per Statement</i>	Date/Time <i>5/27/03</i>
FINAL SAMPLE DISPOSITION	Disposed Method	Disposed By <i>MS-27-03</i>	Date/Time

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-134	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-B-12 (C3246); (14.5'-17')		SAF No. F03-006		Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02-402	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA) Recra	Offsite Property No. A030-278		Bill of Lading/Air Bill No. SEE OSPC				

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive TIC TO B171N9 Special Handling and/or Storage Cool 4°C	Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1
	Volume	60mL	125mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Tritium - H3
	TIC TO:					

Sample No.	Matrix *	Sample Date	Sample Time						
B171B8	SOIL	5-29-03	1750	X	X	X	✓		B171N9

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 5-29-03 1515	Received By/Stored In <i>[Signature]</i>	Date/Time 5-29-03 1515	* 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.				S=Soil SE=Settlement SO=Solid ST=Sludge W=Water O=Oil A=All DS=Drum Solid PL=Plastic T=Trash W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 5-29-03 1515	Received By/Stored In <i>[Signature]</i>	Date/Time 5-29-03 1515	(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) 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 (4) Technetium-99; Strontium-90,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237				
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 6-3-03 1000	Received By/Stored In <i>[Signature]</i>	Date/Time 6-3-03 1000					
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 6-3-03 1000	Received By/Stored In <i>[Signature]</i>	Date/Time					
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 6-4-03/0925	Received By/Stored In <i>[Signature]</i>	Date/Time 6-4-03/0925					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: *TNU Hartford*
 Purchase Order/Project:

DATE: *5-31-03*

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

Laboratory SDG #: *0305L537*

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 01-030 / 0.3°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hammond
Purchase Order/Project:

DATE: 6-4-03

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

Laboratory SDG #: 0305L537

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

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-02-402 / 0.2°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager: