



EBERLINE
SERVICES

0060777

August 5, 2003

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

Reference: P.O. #630
Eberline Services R3-06-078-7539, SDG H2268

Dear Mr. Trent:

Enclosed is the data report for two solid samples designated under SAF No. F03-006 received at Eberline Services on June 16 and 20, 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
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2268 was composed of two 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

No problems were encountered during the course of the analyses.

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

No problems were encountered during the course of the reanalyses.

2.12 Americium-241 Analyses

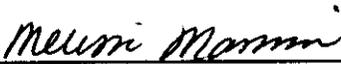
The RPD between sample B161C3 and its sample duplicate was 177%, greater than the 3σ limit of 155%. The difference between sample B161C3 and its sample duplicate was less than the RDL (1.0 pCi/g) for Am-241. No other problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Program Manager

8/5/3

Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2268

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 08/05/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2268

SDG 7539
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2268

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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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2268

SDG 7539
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
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Case no SDG H2268

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

SDG 7539
 Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2268

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R306078-01	B161C3	216-B-12 (C3246)	SOLID		F03-006	F03-006-137	06/13/03 09:00
R306078-02	B161C4	216-B-12 (C3246)	SOLID		F03-006	F03-006-138	06/18/03 13:05
R306078-03	Lab Control Sample		SOLID		F03-006		
R306078-04	Method Blank		SOLID		F03-006		
R306078-05	Duplicate (R306078-01)	216-B-12 (C3246)	SOLID		F03-006		06/13/03 09:00
R306078-06	Spike (R306078-01)	216-B-12 (C3246)	SOLID		F03-006		06/13/03 09:00

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SAMPLE DELIVERY GROUP H2268

SDG 7539
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2268

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
7539	F03-006-137	B161C3	SOLID	97.1	258.9 g		06/16/03	3	R306078-01	7539-001
	F03-006-138	B161C4	SOLID	97.1	255.8 g		06/20/03	2	R306078-02	7539-002
		Method Blank	SOLID						R306078-04	7539-004
		Lab Control Sample	SOLID						R306078-03	7539-003
		Duplicate (R306078-01)	SOLID	97.1	258.9 g		06/16/03	3	R306078-05	7539-005
		Spike (R306078-01)	SOLID	97.1	258.9 g		06/16/03	3	R306078-06	7539-006

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

SDG 7539
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2268

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED			QUALIFIERS	
			BATCH	2σ %	CLIENT	MORE	RE BLANK		LCS
Alpha Spectroscopy									
AM	SOLID	Americium 241 in Soil	7071-091	5.0	2		1	1	1/1
NP	SOLID	Neptunium in Soil	7071-091	5.0	2		1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	7071-091	5.0	2		1	1	1/1
TH	SOLID	Thorium, Isotopic in Soil	7071-091	5.0	2		1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	7071-091	5.0	2		1	1	1/1
Beta Counting									
SR	SOLID	Total Strontium in Soil	7071-091	10.0	2		1	1	1/1
TC	SOLID	Technetium 99 in Soil	7071-091	10.0	2		1	1	1/1
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	7071-091	15.0	2		1	1	1/1
I	SOLID	Iodine 129 in Soil	7071-091	10.0	2		1	1	1/1
Kinetic Phosphorimetry (KPA)									
U_T	SOLID	Uranium, Total in Soil	7071-091	9.0	2		1	1	1/1
Liquid Scintillation Counting									
C	SOLID	Carbon 14 in Soil	7071-091	10.0	2		1	1	1/1
H	SOLID	Tritium in Soil	7071-091	10.0	2		1	1	1/1 1/1 X
NI_L	SOLID	Nickel 63 in Soil	7071-091	10.0	2		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 H2268

LAB WORK SUMMARY

SDG 7539
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2268

LAB SAMPLE	CLIENT SAMPLE ID					SUF-				
COLLECTED	LOCATION		MATRIX		TEST	FIX	ANALYZED	REVIEWED	BY	METHOD
RECEIVED	CUSTODY	SAF No		PLANCHET						
R306078-01	8161C3			7539-001	AM		07/23/03	08/03/03	MCM	Americium 241 in Soil
06/13/03	216-B-12 (C3246)		SOLID	7539-001	C		07/17/03	08/03/03	MCM	Carbon 14 in Soil
06/16/03	F03-006-137	F03-006		7539-001	GAM		07/14/03	08/03/03	MCM	Gamma Scan
				7539-001	H		07/27/03	08/03/03	MCM	Tritium in Soil
				7539-001	I		07/26/03	08/03/03	MCM	Iodine 129 in Soil
				7539-001	NI_L		07/19/03	08/03/03	MCM	Nickel 63 in Soil
				7539-001	NP		07/25/03	08/03/03	MCM	Neptunium in Soil
				7539-001	PU		07/24/03	08/03/03	MCM	Plutonium, Isotopic in Solids
				7539-001	SR		07/18/03	08/03/03	MCM	Total Strontium in Soil
				7539-001	TC		07/25/03	08/03/03	MCM	Technetium 99 in Soil
				7539-001	TH		07/23/03	08/03/03	MCM	Thorium, Isotopic in Soil
				7539-001	U		07/22/03	08/03/03	MCM	Uranium, Isotopic in Soil
				7539-001	U_T		07/14/03	08/03/03	MCM	Uranium, Total in Soil
R306078-02	8161C4			7539-002	AM		07/23/03	08/03/03	MCM	Americium 241 in Soil
06/18/03	216-B-12 (C3246)		SOLID	7539-002	C		07/17/03	08/03/03	MCM	Carbon 14 in Soil
06/20/03	F03-006-138	F03-006		7539-002	GAM		07/10/03	08/03/03	MCM	Gamma Scan
				7539-002	H		07/27/03	08/03/03	MCM	Tritium in Soil
				7539-002	I		07/28/03	08/03/03	MCM	Iodine 129 in Soil
				7539-002	NI_L		07/19/03	08/03/03	MCM	Nickel 63 in Soil
				7539-002	NP		07/25/03	08/03/03	MCM	Neptunium in Soil
				7539-002	PU		07/24/03	08/03/03	MCM	Plutonium, Isotopic in Solids
				7539-002	SR		07/18/03	08/03/03	MCM	Total Strontium in Soil
				7539-002	TC		07/26/03	08/03/03	MCM	Technetium 99 in Soil
				7539-002	TH		07/23/03	08/03/03	MCM	Thorium, Isotopic in Soil
				7539-002	U		07/22/03	08/03/03	MCM	Uranium, Isotopic in Soil
				7539-002	U_T		07/14/03	08/03/03	MCM	Uranium, Total in Soil

WORK SUMMARY

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SAMPLE DELIVERY GROUP H2268

SDG 7539
 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. 630
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LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R306078-03	Lab Control Sample	F03-006	SOLID	7539-003	AM		07/23/03	08/03/03	MCM	Americium 241 in Soil
				7539-003	C		07/17/03	08/03/03	MCM	Carbon 14 in Soil
				7539-003	GAM		07/11/03	08/03/03	MCM	Gamma Scan
				7539-003	H		07/27/03	08/03/03	MCM	Tritium in Soil
				7539-003	I		07/29/03	08/03/03	MCM	Iodine 129 in Soil
				7539-003	NI_L		07/19/03	08/03/03	MCM	Nickel 63 in Soil
				7539-003	NP		07/25/03	08/03/03	MCM	Neptunium in Soil
				7539-003	PU		07/24/03	08/03/03	MCM	Plutonium, Isotopic in Solids
				7539-003	SR		07/18/03	08/03/03	MCM	Total Strontium in Soil
				7539-003	TC		07/25/03	08/03/03	MCM	Technetium 99 in Soil
				7539-003	TH		07/23/03	08/03/03	MCM	Thorium, Isotopic in Soil
				7539-003	U		07/22/03	08/03/03	MCM	Uranium, Isotopic in Soil
				7539-003	U_T		07/14/03	08/03/03	MCM	Uranium, Total in Soil
				R306078-04	Method Blank	F03-006	SOLID	7539-004	AM	
7539-004	C		07/17/03					08/03/03	MCM	Carbon 14 in Soil
7539-004	GAM		07/10/03					08/03/03	MCM	Gamma Scan
7539-004	H		07/28/03					08/03/03	MCM	Tritium in Soil
7539-004	I		07/29/03					08/03/03	MCM	Iodine 129 in Soil
7539-004	NI_L		07/19/03					08/03/03	MCM	Nickel 63 in Soil
7539-004	NP		07/25/03					08/03/03	MCM	Neptunium in Soil
7539-004	PU		07/24/03					08/03/03	MCM	Plutonium, Isotopic in Solids
7539-004	SR		07/18/03					08/03/03	MCM	Total Strontium in Soil
7539-004	TC		07/26/03					08/03/03	MCM	Technetium 99 in Soil
7539-004	TH		07/23/03					08/03/03	MCM	Thorium, Isotopic in Soil
7539-004	U		07/22/03					08/03/03	MCM	Uranium, Isotopic in Soil
7539-004	U_T		07/14/03					08/03/03	MCM	Uranium, Total in Soil

WORK SUMMARY

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

SDG 7539
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG_H2268

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R306078-05	Duplicate (R306078-01)			7539-005	AM		07/23/03	08/03/03	MCM	Americium 241 in Soil
06/13/03	216-B-12 (C3246)		SOLID	7539-005	C		07/17/03	08/03/03	MCM	Carbon 14 in Soil
06/16/03		F03-006		7539-005	GAM		07/17/03	08/03/03	MCM	Gamma Scan
				7539-005	H		07/28/03	08/03/03	MCM	Tritium in Soil
				7539-005	I		07/30/03	08/03/03	MCM	Iodine 129 in Soil
				7539-005	NI_L		07/19/03	08/03/03	MCM	Nickel 63 in Soil
				7539-005	NP		07/25/03	08/03/03	MCM	Neptunium in Soil
				7539-005	PU		07/24/03	08/03/03	MCM	Plutonium, Isotopic in Solids
				7539-005	SR		07/18/03	08/03/03	MCM	Total Strontium in Soil
				7539-005	TC		07/25/03	08/03/03	MCM	Technetium 99 in Soil
				7539-005	TH		07/23/03	08/03/03	MCM	Thorium, Isotopic in Soil
				7539-005	U		07/22/03	08/03/03	MCM	Uranium, Isotopic in Soil
				7539-005	U_T		07/14/03	08/03/03	MCM	Uranium, Total in Soil
R306078-06	Spike (R306078-01)			7539-006	H		07/28/03	08/03/03	MCM	Tritium in Soil
06/13/03	216-B-12 (C3246)		SOLID							
06/16/03		F03-006								

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	F03-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
C	F03-006	Carbon 14 in Soil	C14_COX_LSC	2			1	1	1		5
GAM	F03-006	Gamma Scan	GAMMA_GS	2			1	1	1		5
H	F03-006	Tritium in Soil	906.0_H3_LSC	2			1	1	1	1	6
I	F03-006	Iodine 129 in Soil	I129_SEP_LEPS_GS	2			1	1	1		5
NI_L	F03-006	Nickel 63 in Soil	NI63_LSC	2			1	1	1		5
NP	F03-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1		5
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	2			1	1	1		5
TC	F03-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1		5
TH	F03-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	2			1	1	1		5
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				26			13	13	13	1	66

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Protocol Hanford
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Form DVD-LWS
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-004

Method Blank

METHOD BLANK

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306078-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7539-004</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	-0.048	0.18	0.30	400	U	H
Carbon 14	14762-75-5	0.573	1.7	2.9	50	U	C
Nickel 63	13981-37-8	-0.117	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	0.052	0.22	0.45	1.0	U	SR
Technetium 99	14133-76-7	0.132	0.16	0.58	15	U	TC
Thorium 228	14274-82-9	-0.017	0.034	0.13		U	TH
Thorium 230	14269-63-7	0.172	0.17	0.29	1.0	U	TH
Thorium 232	TH-232	0	0.034	0.13	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.002	0.004	1.0	U	U_T
Uranium 233/234	U-233/234	-0.017	0.034	0.13	1.0	U	U
Uranium 235	15117-96-1	-0.021	0.042	0.16	1.0	U	U
Uranium 238	U-238	0	0.034	0.13	1.0	U	U
Neptunium 237	13994-20-2	0	0.070	0.10	1.0	U	NP
Plutonium 238	13981-16-3	0.029	0.057	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.057	0.22	1.0	U	PU
Americium 241	14596-10-2	-0.007	0.040	0.064	1.0	U	AM
Iodine 129	15046-84-1	-0.044	0.34	0.76	2.0	U	I
Potassium 40	13966-00-2	U		0.87		U	GAM
Cobalt 60	10198-40-0	U		<u>0.069</u>	0.050	U	GAM
Tin 126	15832-50-5	U		0.061		U	GAM
Cesium 134	13967-70-9	U		0.050		U	GAM
Cesium 137	10045-97-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	U		0.094		U	GAM
Radium 228	15262-20-1	U		0.19		U	GAM
Europium 152	14683-23-9	U		<u>0.11</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.12</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	U		0.061		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM

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

Lab id <u>EBRLNE</u>
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 SAMPLE DELIVERY GROUP H2268

7539-004

Method Blank

BLANK, cont.

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	<u>SDG H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306078-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7539-004</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	QUALIFIERS	TEST
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		5.8		U	GAM
Americium 241	14596-10-2	U		0.10		U	GAM

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

QC-BLANK 45061

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>08/05/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

7539-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7539</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H2268</u> Contract <u>No. 630</u>
Lab sample id <u>R306078-03</u> Dept sample id <u>7539-003</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	11.5	0.41	0.31	400	H		12.8	0.51	90	84-116	80-120
Carbon 14	1670	34	8.8	50	C		1790	72	93	84-116	80-120
Nickel 63	211	4.5	2.4	30	NI_L		228	9.1	93	85-115	80-120
Total Strontium	22.5	1.0	0.37	1.0	SR		21.0	0.84	107	81-119	80-120
Technetium 99	108	2.4	0.49	15	TC		109	4.4	99	84-116	80-120
Thorium 230	39.9	2.8	0.32	1.0	TH		40.8	1.6	98	86-114	80-120
Total Uranium (ug/g)	17.5	2.1	0.042	1.0	U_T		16.5	0.66	106	75-125	80-120
Uranium 233/234	9.05	0.97	0.54	1.0	U		9.28	0.37	98	82-118	80-120
Uranium 235	7.35	0.86	0.15	1.0	U		7.54	0.30	97	80-120	80-120
Uranium 238	9.53	0.98	0.52	1.0	U		10.1	0.40	94	83-117	80-120
Neptunium 237	18.3	1.5	0.093	1.0	NP		19.9	0.80	92	85-115	80-120
Plutonium 238	24.3	2.5	0.21	1.0	PU		24.4	0.98	100	82-118	80-120
Plutonium 239/240	29.4	2.9	0.21	1.0	PU		26.4	1.1	111	80-120	80-120
Americium 241	19.2	2.2	0.27	1.0	AM		19.0	0.76	101	80-120	80-120
Iodine 129	124	1.5	1.9	2.0	I		116	4.6	107	83-117	80-120
Cobalt 60	3.47	0.22	<u>0.12</u>	0.050	GAM		3.17	0.13	110	73-127	80-120
Cesium 137	3.46	0.18	<u>0.13</u>	0.10	GAM		3.13	0.13	110	73-127	80-120

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

QC-LCS 45060

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>08/05/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-005

B161C3

DUPLICATE

SDG <u>7539</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R306078-05</u> Dept sample id <u>7539-005</u> % solids <u>97.1</u>	ORIGINAL Lab sample id <u>R306078-01</u> Dept sample id <u>7539-001</u> Received <u>06/16/03</u> % solids <u>97.1</u>	Client/Case no <u>Hanford</u> SDG <u>H2268</u> Contract No. <u>630</u> Client sample id <u>B161C3</u> Location/Matrix <u>216-B-12 (C3246)</u> <u>SOLID</u> Collected/Weight <u>06/13/03 09:00</u> <u>258.9 g</u> Custody/SAF No <u>F03-006-137</u> <u>F03-006</u>
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ANALYTE	DUPLICATE		2σ ERR		MDA	RDL	QUALI- FIERS	TEST	ORIGINAL		2σ ERR		MDA	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
	pCi/g	(COUNT)	pCi/g	(COUNT)					pCi/g	(COUNT)	pCi/g	(COUNT)					
Tritium	4.92	0.30	0.30	400			H		5.20	0.30	0.30			6	25		
Carbon 14	-1.40	1.5	2.5	50			U	C	-0.273	1.5	2.6		U	-			
Nickel 63	-0.102	1.2	2.1	30			U	NI_L	1.05	1.5	2.4		U	-			
Total Strontium	-0.068	0.16	0.36	1.0			U	SR	0.003	0.17	0.35		U	-			
Technetium 99	0.004	0.19	0.58	15			U	TC	0.192	0.16	0.55		U	-			
Thorium 228	0.415	0.21	0.20					TH	0.660	0.22	0.14			46	86		
Thorium 230	0.580	0.25	0.20	1.0				TH	0.801	0.29	0.32			32	84		
Thorium 232	0.704	0.25	0.16	1.0				TH	0.409	0.18	0.14			53	84		
Total Uranium (ug/g)	0.344	0.041	0.004	1.0				U_T	0.342	0.040	0.004			1	32		
Uranium 233/234	0.543	0.21	0.13	1.0				U	0.358	0.18	0.14			41	93		
Uranium 235	0.042	0.042	0.16	1.0			U	U	0.022	0.043	0.17		U	-			
Uranium 238	0.315	0.14	0.13	1.0				U	0.430	0.18	0.14			31	92		
Neptunium 237	0	0.084	0.13	1.0			U	NP	0.031	0.062	0.093		U	-			
Plutonium 238	0.023	0.046	0.17	1.0			U	PU	0.025	0.049	0.19		U	-			
Plutonium 239/240	0	0.046	0.17	1.0			U	PU	0	0.049	0.19		U	-			
Americium 241	0.029	0.058	0.22	1.0			U	AM	0.470	0.25	0.24			177	155		
Iodine 129	0.150	0.63	1.4	2.0			U	I	-0.113	0.48	1.1		U	-			
Potassium 40	15.0	1.6	0.97					GAM	15.0	1.0	0.53			0	37		
Cobalt 60	U		0.13	0.050			U	GAM	U		0.12		U	-			
Tin 126	U		0.12				U	GAM	U		0.071		U	-			
Cesium 134	U		0.10				U	GAM	U		0.064		U	-			
Cesium 137	U		0.079	0.10			U	GAM	U		0.049		U	-			
Radium 226	0.354	0.13	0.16					GAM	0.383	0.068	0.078			8	68		
Radium 228	0.897	0.45	0.41					GAM	0.690	0.23	0.23			26	101		
Europium 152	U		0.18	0.10			U	GAM	U		0.11		U	-			
Europium 154	U		0.26	0.10			U	GAM	U		0.18		U	-			
Europium 155	U		0.18	0.10			U	GAM	U		0.11		U	-			
Thorium 228	0.573	0.092	0.085					GAM	0.633	0.069	0.056			10	43		

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

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 12

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>08/05/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-005

B161C3

DUPLICATE, cont.

SDG <u>7539</u>		Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>R306078-05</u>	Lab sample id <u>R306078-01</u>	Client sample id <u>B161C3</u>	
Dept sample id <u>7539-005</u>	Dept sample id <u>7539-001</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
	Received <u>06/16/03</u>	Collected/Weight <u>06/13/03 09:00</u>	<u>258.9 g</u>
% solids <u>97.1</u>	% solids <u>97.1</u>	Custody/SAF No <u>F03-006-137</u>	<u>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
Thorium 232	0.897	0.45	0.41			GAM	0.690	0.23	0.23		26	101	
Uranium 235	U		0.26		U	GAM	U		0.16	U	-		
Uranium 238	U		11		U	GAM	U		6.4	U	-		
Americium 241	U		0.18		U	GAM	U		0.11	U	-		

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

QC-DUP#1 45062

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>08/05/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-006

B161C3

MATRIX SPIKE

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R306078-06</u>	Lab sample id <u>R306078-01</u>	Client sample id <u>B161C3</u>
Dept sample id <u>7539-006</u>	Dept sample id <u>7539-001</u>	Location/Matrix <u>216-B-12 (C3246)</u> <u>SOLID</u>
	Received <u>06/16/03</u>	Collected/Weight <u>06/13/03 09:00</u> <u>258.9 g</u>
% solids <u>97.1</u>	% solids <u>97.1</u>	Custody/SAF No <u>F03-006-137</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
Tritium	49.9	0.78	0.31	400	X H	49.5	2.0	5.20	0.30	90	83-117	60-140

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

QC-MS#1 45063

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-MS
 Version 3.06
 Report date 08/05/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-001

B161C3

DATA SHEET

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306078-01</u>	Client sample id <u>B161C3</u>	
Dept sample id <u>7539-001</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/16/03</u>	Collected/Weight <u>06/13/03 09:00</u>	<u>258.9 g</u>
% solids <u>97.1</u>	Custody/SAF No <u>F03-006-137</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	5.20	0.30	0.30	400		H
Carbon 14	14762-75-5	-0.273	1.5	2.6	50	U	C
Nickel 63	13981-37-8	1.05	1.5	2.4	30	U	NI_L
Total Strontium	SR-RAD	0.003	0.17	0.35	1.0	U	SR
Technetium 99	14133-76-7	0.192	0.16	0.55	15	U	TC
Thorium 228	14274-82-9	0.660	0.22	0.14			TH
Thorium 230	14269-63-7	0.801	0.29	0.32	1.0		TH
Thorium 232	TH-232	0.409	0.18	0.14	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.342	0.040	0.004	1.0		U_T
Uranium 233/234	U-233/234	0.358	0.18	0.14	1.0		U
Uranium 235	15117-96-1	0.022	0.043	0.17	1.0	U	U
Uranium 238	U-238	0.430	0.18	0.14	1.0		U
Neptunium 237	13994-20-2	0.031	0.062	0.093	1.0	U	NP
Plutonium 238	13981-16-3	0.025	0.049	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.049	0.19	1.0	U	PU
Americium 241	14596-10-2	0.470	0.25	0.24	1.0		AM
Iodine 129	15046-84-1	-0.113	0.48	1.1	2.0	U	I
Potassium 40	13966-00-2	15.0	1.0	0.53			GAM
Cobalt 60	10198-40-0	U		<u>0.12</u>	0.050	U	GAM
Tin 126	15832-50-5	U		0.071		U	GAM
Cesium 134	13967-70-9	U		0.064		U	GAM
Cesium 137	10045-97-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	0.383	0.068	0.078			GAM
Radium 228	15262-20-1	0.690	0.23	0.23			GAM
Europium 152	14683-23-9	U		<u>0.11</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.18</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.11</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.633	0.069	0.056			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>08/05/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-001

B161C3

DATA SHEET, cont

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306078-01</u>	Client sample id <u>B161C3</u>	
Dept sample id <u>7539-001</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/16/03</u>	Collected/Weight <u>06/13/03 09:00</u>	<u>258.9 g</u>
% solids <u>97.1</u>	Custody/SAF No <u>F03-006-137</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	0.690	0.23	0.23			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		6.4		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>3.06</u>
Report date <u>08/05/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-002

B161C4

DATA SHEET

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R306078-02</u>	Client sample id <u>B161C4</u>	
Dept sample id <u>7539-002</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/20/03</u>	Collected/Weight <u>06/18/03 13:05</u>	<u>255.8 g</u>
% solids <u>97.1</u>	Custody/SAF No <u>F03-006-138</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	7.59	0.29	0.23	400		H
Carbon 14	14762-75-5	0.474	1.6	2.7	50	U	C
Nickel 63	13981-37-8	-0.373	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.022	0.17	0.35	1.0	U	SR
Techneium 99	14133-76-7	0.083	0.22	0.57	15	U	TC
Thorium 228	14274-82-9	0.307	0.16	0.12			TH
Thorium 230	14269-63-7	0.805	0.26	0.29	1.0		TH
Thorium 232	TH-232	0.564	0.20	0.12	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.334	0.042	0.004	1.0		U_T
Uranium 233/234	U-233/234	0.308	0.14	0.13	1.0		U
Uranium 235	15117-96-1	0.021	0.041	0.16	1.0	U	U
Uranium 238	U-238	0.530	0.21	0.13	1.0		U
Neptunium 237	13994-20-2	0	0.085	0.13	1.0	U	NP
Plutonium 238	13981-16-3	0	0.048	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0.024	0.048	0.18	1.0	U	PU
Americium 241	14596-10-2	0	0.078	0.30	1.0	U	AM
Iodine 129	15046-84-1	-0.007	0.57	1.3	2.0	U	I.
Potassium 40	13966-00-2	14.4	0.93	0.47			GAM
Cobalt 60	10198-40-0	U		<u>0.054</u>	0.050	U	GAM
Tin 126	15832-50-5	U		0.070		U	GAM
Cesium 134	13967-70-9	U		0.063		U	GAM
Cesium 137	10045-97-3	U		0.045	0.10	U	GAM
Radium 226	13982-63-3	0.567	0.096	0.090			GAM
Radium 228	15262-20-1	0.816	0.27	0.24			GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.15</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.092	0.10	U	GAM
Thorium 228	14274-82-9	0.627	0.056	0.047			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>08/05/03</u>

DATA SHEETS

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

7539-002

B161C4

DATA SHEET, cont

SDG <u>7539</u>	Client/Case no <u>Hanford</u>	SDG <u>H2268</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R306078-02</u>	Client sample id <u>B161C4</u>	
Dept sample id <u>7539-002</u>	Location/Matrix <u>216-B-12 (C3246)</u>	<u>SOLID</u>
Received <u>06/20/03</u>	Collected/Weight <u>06/18/03 13:05</u>	<u>255.8 g</u>
% solids <u>97.1</u>	Custody/SAF No <u>F03-006-138</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	0.816	0.27	0.24			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		5.9		U	GAM
Americium 241	14596-10-2	U		0.096		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>08/05/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
 SDG 7539
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2268

RESULTS

LAB	RAW	SUF-		Americium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241
Preparation batch 7071-091				
R306078-01		7539-001	B161C3	0.470
R306078-02		7539-002	B161C4	U
R306078-03		7539-003	LCS (QC ID=45060)	ok
R306078-04		7539-004	BLK (QC ID=45061)	U
R306078-05		7539-005	Duplicate (R306078-01)	<u>OUT</u> 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 7071-091			2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 091										
R306078-01		B161C3	0.24	0.500			72		117			40	07/23/03 07/23 SS-042
R306078-02		B161C4	0.30	0.500			55		118			35	07/23/03 07/23 SS-028
R306078-03		LCS (QC ID=45060)	0.27	0.500			62		118				07/23/03 07/23 SS-029
R306078-04		BLK (QC ID=45061)	0.064	0.500			68		590				07/23/03 07/24 SS-062
R306078-05		Duplicate (R306078-01)	0.22	0.500			77		117			40	07/23/03 07/23 SS-055
		(QC ID=45062)											

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

PROCEDURES	REFERENCE	AMCNISO_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>0.22</u> ± <u>0.18</u>
FOR 5 SAMPLES	YIELD	<u>67</u> ± <u>17</u>

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/05/03

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY
NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Test NP Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-		Neptunium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	237
Preparation batch 7071-091				
R306078-01		7539-001	B161C3	U
R306078-02		7539-002	B161C4	U
R306078-03		7539-003	LCS (QC ID=45060)	ok
R306078-04		7539-004	BLK (QC ID=45061)	U
R306078-05		7539-005	Duplicate (R306078-01)	- 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 7071-091			2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 091												
R306078-01		B161C3	0.093	0.500			60		138			42	07/24/03	07/25	SS-055
R306078-02		B161C4	0.13	0.500			44		139			37	07/24/03	07/25	SS-056
R306078-03		LCS (QC ID=45060)	0.093	0.500			61		138				07/24/03	07/25	SS-057
R306078-04		BLK (QC ID=45061)	0.10	0.500			56		138				07/24/03	07/25	SS-058
R306078-05		Duplicate (R306078-01)	0.13	0.500			46		139			42	07/24/03	07/25	SS-062
		(QC ID=45062)													

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

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	<u>0.11</u> ± <u>0.038</u>
FOR 5 SAMPLES	YIELD	<u>53</u> ± <u>16</u>

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

SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PJ Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-		Plutonium	Plutonium	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240
Preparation batch 7071-091						
R306078-01			7539-001	B161C3	U	U
R306078-02			7539-002	B161C4	U	U
R306078-03			7539-003	LCS (QC ID=45060)	ok	ok
R306078-04			7539-004	BLK (QC ID=45061)	U	U
R306078-05			7539-005	Duplicate (R306078-01)	- U	- 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 7071-091 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 091																
R306078-01			B161C3	0.19	0.500			78		137			41	07/24/03	07/24	SS-057
R306078-02			B161C4	0.18	0.500			83		137			36	07/24/03	07/24	SS-058
R306078-03			LCS (QC ID=45060)	0.21	0.500			71		136				07/24/03	07/24	SS-062
R306078-04			BLK (QC ID=45061)	0.22	0.500			78		137				07/24/03	07/24	SS-063
R306078-05			Duplicate (R306078-01) (QC ID=45062)	0.17	0.500			85		137			41	07/24/03	07/24	SS-065

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>0.19</u> ± <u>0.041</u>
FOR 5 SAMPLES	YIELD <u>79</u> ± <u>11</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test TH Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

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

Preparation batch 7071-091

R306078-01	7539-001	B161C3	0.801
R306078-02	7539-002	B161C4	0.805
R306078-03	7539-003	LCS (QC ID=45060)	ok
R306078-04	7539-004	BLK (QC ID=45061)	U
R306078-05	7539-005	Duplicate (R306078-01)	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- 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 7071-091 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 091

R306078-01	B161C3	0.32	0.250	93	318	40	07/22/03	07/23	SS-059
R306078-02	B161C4	0.29	0.250	102	318	35	07/22/03	07/23	SS-060
R306078-03	LCS (QC ID=45060)	0.32	0.250	89	318		07/22/03	07/23	SS-061
R306078-04	BLK (QC ID=45061)	0.29	0.250	98	318		07/22/03	07/23	SS-062
R306078-05	Duplicate (R306078-01) (QC ID=45062)	0.20	0.250	92	318	40	07/22/03	07/23	SS-063

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

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

AVERAGES ± 2 SD	MDA <u>0.28</u> ± <u>0.099</u>
FOR 5 SAMPLES	YIELD <u>95</u> ± <u>10</u>

Lab id EBRLNE
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB SAMPLE ID	RAW TEST FIX	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 7071-091											
R306078-01		7539-001	B161C3	0.358	U	0.430	83	54	5	10	
R306078-02		7539-002	B161C4	0.308	U	0.530	<u>58</u>	35	4	8	
R306078-03		7539-003	LCS (QC ID=45060)	ok	ok	ok					
R306078-04		7539-004	BLK (QC ID=45061)	U	U	U					
R306078-05		7539-005	Duplicate (R306078-01)	ok	- U	ok	172	102	13	15	
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 105			7	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST FIX	SUF- CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7071-091			2σ prep error 5.0 %			Reference Lab Notebook 7071 pg. 091								
R306078-01		B161C3	0.17	0.500			84	175			39	07/22/03	07/22	SS-051
R306078-02		B161C4	0.16	0.500			89	175			34	07/22/03	07/22	SS-053
R306078-03		LCS (QC ID=45060)	0.54	0.500			90	175				07/22/03	07/22	SS-059
R306078-04		BLK (QC ID=45061)	0.16	0.500			86	176				07/22/03	07/22	SS-060
R306078-05		Duplicate (R306078-01) (QC ID=45062)	0.16	0.500			82	176			39	07/22/03	07/22	SS-061
Nominal values and limits from method			1.0	0.500			20-105	100	100		180			

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
	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>0.24</u> ± <u>0.34</u>
FOR 5 SAMPLES	YIELD	<u>86</u> ± <u>7</u>

METHOD SUMMARIES

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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-LMS</u>
Version	<u>3.06</u>
Report date	<u>08/05/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY
TOTAL STRONTIUM IN SOIL
BETA COUNTING

Test SR Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7071-091				
R306078-01		7539-001	B161C3	U
R306078-02		7539-002	B161C4	U
R306078-03		7539-003	LCS (QC ID=45060)	ok
R306078-04		7539-004	BLK (QC ID=45061)	U
R306078-05		7539-005	Duplicate (R306078-01)	- 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 7071-091 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 091													
R306078-01		B161C3	0.35	1.00			93	100				35 07/18/03	07/18 GRB-223
R306078-02		B161C4	0.35	1.00			94	100				30 07/18/03	07/18 GRB-224
R306078-03		LCS (QC ID=45060)	0.37	1.00			74	100				07/18/03	07/18 GRB-219
R306078-04		BLK (QC ID=45061)	0.45	1.00			74	100				07/18/03	07/18 GRB-230
R306078-05		Duplicate (R306078-01) (QC ID=45062)	0.36	1.00			95	100				35 07/18/03	07/18 GRB-232
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	<u>0.38</u> ± <u>0.084</u>
FOR 5 SAMPLES	YIELD	<u>86</u> ± <u>22</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

Test IC Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

LAB METHOD SUMMARY
TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-	Technetium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 7071-091				
R306078-01		7539-001	B161C3	U
R306078-02		7539-002	B161C4	U
R306078-03		7539-003	LCS (QC ID=45060)	ok
R306078-04		7539-004	BLK (QC ID=45061)	U
R306078-05		7539-005	Duplicate (R306078-01)	- 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 7071-091 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 091															
R306078-01		B161C3	0.55	1.02			91		50			42	07/22/03	07/25	GRB-218
R306078-02		B161C4	0.57	1.02			86		50			38	07/22/03	07/26	GRB-222
R306078-03		LCS (QC ID=45060)	0.49	1.00			100		50				07/22/03	07/25	GRB-220
R306078-04		BLK (QC ID=45061)	0.58	1.00			89		50				07/22/03	07/26	GRB-223
R306078-05		Duplicate (R306078-01) (QC ID=45062)	0.58	1.02			87		50			42	07/22/03	07/25	GRB-218
Nominal values and limits from method 15 1.00 20-105 50 180															

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>0.55</u> ± <u>0.076</u>
FOR 5 SAMPLES	YIELD <u>91</u> ± <u>11</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/05/03

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY
GAMMA SCAN
GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-				
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Cobalt 60	Cesium 137
Preparation batch 7071-091						
R306078-01		7539-001	B161C3		U	U
R306078-02		7539-002	B161C4		U	U
R306078-03		7539-003	LCS (QC ID=45060)		ok	ok
R306078-04		7539-004	BLK (QC ID=45061)		U	U
R306078-05		7539-005	Duplicate (R306078-01)		- U	- U

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

METHOD PERFORMANCE

LAB	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 7071-091 2σ prep error 15.0 % Reference Lab Notebook 7071 pg. 091														
R306078-01		B161C3		0.40	75.7					1058			31 07/08/03	07/14 PD,03,00
R306078-02		B161C4		0.37	73.9					443			22 07/08/03	07/10 PD,04,00
R306078-03		LCS (QC ID=45060)		0.12	73.9					456			07/08/03	07/11. PD,03,00
R306078-04		BLK (QC ID=45061)		0.41	73.9					799			07/08/03	07/10 PD,03,00
R306078-05		Duplicate (R306078-01)		0.72	75.7					421			34 07/08/03	07/17 PD,03,00
		(QC ID=45062)												

Nominal values and limits from method 0.050 73.9 100 180

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

AVERAGES ± 2 SD	MDA	0.40 ± 0.43
FOR 5 SAMPLES	YIELD	_____ ± _____

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 H2268

LAB METHOD SUMMARY
IODINE 129 IN SOIL
GAMMA SPECTROSCOPY

Test I Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129	
Preparation batch 7071-091					
R306078-01		7539-001	B161C3	U	
R306078-02		7539-002	B161C4	U	
R306078-03		7539-003	LCS (QC ID=45060)	ok	
R306078-04		7539-004	BLK (QC ID=45061)	U	
R306078-05		7539-005	Duplicate (R306078-01)	-	U

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 7071-091			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 091												
R306078-01		B161C3	1.1	1.00			48	1521				43	07/22/03	07/26	XSPEC-004
R306078-02		B161C4	1.3	1.02			49	840				40	07/22/03	07/28	XSPEC-004
R306078-03		LCS (QC ID=45060)	1.9	1.00			92	612					07/22/03	07/29	XSPEC-004
R306078-04		BLK (QC ID=45061)	0.76	1.00			82	984					07/22/03	07/29	XSPEC-004
R306078-05		Duplicate (R306078-01) (QC ID=45062)	1.4	1.00			47	613				47	07/22/03	07/30	XSPEC-004

Nominal values and limits from method 2.0 1.00 20-105 300 180

PROCEDURES REFERENCE 1129_SEP_LEPS_GS
CP-024 Iodine-129, Sample Dissolution, rev 3
CP-530 Iodine-129 Purification, rev 0

AVERAGES ± 2 SD MDA 1.3 ± 0.84
FOR 5 SAMPLES YIELD 64 ± 43

Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY (KPA)

Test U T Matrix SOLID
 SDG 7539
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2268

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Uranium
Preparation batch 7071-091				
R306078-01		7539-001	B161C3	0.342
R306078-02		7539-002	B161C4	0.334
R306078-03		7539-003	LCS (QC ID=45060)	ok
R306078-04		7539-004	BLK (QC ID=45061)	U
R306078-05		7539-005	Duplicate (R306078-01)	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 7071-091			2σ prep error 9.0 %		Reference Lab Notebook 7071 pg. 091								
R306078-01		B161C3	0.004	0.100								31 07/14/03	07/14 KPA-001
R306078-02		B161C4	0.004	0.100								26 07/14/03	07/14 KPA-001
R306078-03		LCS (QC ID=45060)	0.042	0.100								07/14/03	07/14 KPA-001
R306078-04		BLK (QC ID=45061)	0.004	0.100								07/14/03	07/14 KPA-001
R306078-05		Duplicate (R306078-01) (QC ID=45062)	0.004	0.100								31 07/14/03	07/14 KPA-001
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>0.012 ± 0.034</u>
FOR 5 SAMPLES	YIELD _____ ± _____

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Test C Matrix SOLID
 SDG 7539
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2268

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

Preparation batch 7071-091

R306078-01	7539-001	B161C3	U
R306078-02	7539-002	B161C4	U
R306078-03	7539-003	LCS (QC ID=45060)	ok
R306078-04	7539-004	BLK (QC ID=45061)	U
R306078-05	7539-005	Duplicate (R306078-01)	- U

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 7071-091 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 091

R306078-01	B161C3	2.6	0.379	100	100	34	07/16/03	07/17	LSC-004
R306078-02	B161C4	2.7	0.356	100	100	29	07/16/03	07/17	LSC-004
R306078-03	LCS (QC ID=45060)	8.8	0.356	100	10		07/16/03	07/17	LSC-004
R306078-04	BLK (QC ID=45061)	2.9	0.356	100	100		07/16/03	07/17	LSC-004
R306078-05	Duplicate (R306078-01) (QC ID=45062)	2.5	0.387	100	100	34	07/16/03	07/17	LSC-004

Nominal values and limits from method 50 0.356 50 180

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

AVERAGES ± 2 SD MDA 3.9 ± 5.5
 FOR 5 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/05/03

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

LAB METHOD SUMMARY
TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Tritium
Preparation batch 7071-091					
R306078-01		7539-001	B161C3		5.20
R306078-02		7539-002	B161C4		7.59
R306078-03		7539-003	LCS (QC ID=45060)		ok
R306078-04		7539-004	BLK (QC ID=45061)		U
R306078-05		7539-005	Duplicate (R306078-01)		ok
R306078-06		7539-006	Spike (R306078-01)		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 7071-091 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 091													
R306078-01		B161C3	0.30	21.0			34		120		44	07/25/03 07/27	LSC-006
R306078-02		B161C4	0.23	27.4			33		120		39	07/25/03 07/27	LSC-006
R306078-03		LCS (QC ID=45060)	0.31	20.0			33		120			07/25/03 07/27	LSC-006
R306078-04		BLK (QC ID=45061)	0.30	20.0			33		120			07/25/03 07/28	LSC-006
R306078-05		Duplicate (R306078-01) (QC ID=45062)	0.30	20.8			33		120		45	07/25/03 07/28	LSC-006
R306078-06		Spike (R306078-01) (QC ID=45063)	0.31	21.0			33		120		45	07/25/03 07/28	LSC-006

Nominal values and limits from method 400 20.0 25 180

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

AVERAGES ± 2 SD MDA 0.29 ± 0.061
FOR 6 SAMPLES YIELD 33 ± 1

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Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/05/03

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2268

Test NI L Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

LAB METHOD SUMMARY
NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2268

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7071-091

R306078-01	7539-001	B161C3	U
R306078-02	7539-002	B161C4	U
R306078-03	7539-003	LCS (QC ID=45060)	ok
R306078-04	7539-004	BLK (QC ID=45061)	U
R306078-05	7539-005	Duplicate (R306078-01)	- 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 7071-091 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 091

R306078-01	B161C3	2.4	0.500	89	100	36	07/19/03	07/19	LSC-004
R306078-02	B161C4	2.3	0.500	90	100	31	07/19/03	07/19	LSC-004
R306078-03	LCS (QC ID=45060)	2.4	0.500	100	75		07/19/03	07/19	LSC-004
R306078-04	BLK (QC ID=45061)	2.1	0.500	100	100		07/19/03	07/19	LSC-004
R306078-05	Duplicate (R306078-01) (QC ID=45062)	2.1	0.500	99	100	36	07/19/03	07/19	LSC-004

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-281	Nickel-63 Purification By Extraction Chromatography, rev 0

AVERAGES ± 2 SD	MDA	<u>2.3</u> ± <u>0.30</u>
FOR 5 SAMPLES	YIELD	<u>96</u> ± <u>11</u>

Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-LMS</u>
Version	<u>3.06</u>
Report date	<u>08/05/03</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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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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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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 Protocol Hanford
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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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DUPLICATE

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

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

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

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

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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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METHOD SUMMARY

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

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
 - * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- * Aliquots are underlined if less than the nominal value specified for the method.
 - * 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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 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/05/03

REPORT GUIDES

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2268

SDG 7539

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

Contract No. 630

Case no SDG H2268

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

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

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

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

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

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

REPORT GUIDES

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SUMMARY DATA SECTION

Page 45

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/05/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2268

SDG 7539
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2268

METHOD SUMMARY

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

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

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

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

REPORT GUIDES

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SUMMARY DATA SECTION

Page 46

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/05/03

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-137		Page 1 of 1					
Collector Johansen/Pope/Pfister/Hughes			Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days				
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-B-12 (C3246); (247.5-250) H2268 (7538)			SAF No. F03-006		Air Quality <input type="checkbox"/>							
Ice Chest No. ERC 99-508			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express								
Shipped To EBERLINE SERVICES (Formerly TMA)			Offsite Property No. A030 293			Bill of Lading/Air Bill No. SEE OSPA									
POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO B171P5 99 6.13.03 Radioactive tie to B171P5 Special Handling and/or Storage None				Preservation		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None		
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	1	1	1	1	
				Volume		60mL	125mL	60mL	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.		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										
✓ B161C3		SOIL	6.13.03		0900						X X X				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From <i>J.S. Pope 9/9/03</i>		Date/Time 6.13.03 1120		Received By/Stored In <i>Greg Thomas</i>		Date/Time 6/13/03		The lab is to achieve a detection limit of 50.0 pCi/g for C-14. Report gross gross 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 radl characteristics. (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); TPE Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-G (3) TCL 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 (Carbon-14; 100m-129; Nickel-63; Neptunium-237); (6) Tech-99; Strontium 99.90 - Total Sr; Isotopic Thorium (Thorium-232);				S-Soil SE-Sediment SO-Solid SL-Sludge W-Water O-Oil A-Air DS-Drum Solid DL-Drum Liquid T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other			
Relinquished By/Removed From <i>Greg Thomas</i>		Date/Time 6/13/03		Received By/Stored In <i>ERC</i>		Date/Time 1125									
Relinquished By/Removed From <i>R. Fisher</i>		Date/Time 6.13.03		Received By/Stored In <i>Fed Ex</i>		Date/Time 6.13.03									
Relinquished By/Removed From <i>Fred Cox</i>		Date/Time 6.16.03 10:30		Received By/Stored In <i>DR. Jones</i>		Date/Time 6.16.03 10:30									
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				F03-006-138		Page 1 of 1	
Collector 6-18-3 RR Johnson/Pops/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-B-12 (C3246); (294-5-297) 6-18-3 RR H2268 (7539) 302-304.5		SAF No. F03-006		Air Quality <input type="checkbox"/>		Data Turnaround 45 Days	
Ice Chest No. ERC 01.059		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. D030 295		Bill of Lading/Air Bill No. SFE DSPC					

POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: B171P5 B171P5 Re 6-19-03 Special Handling and/or Storage None	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	1	1	1	1	1
	Volume	60mL	125mL	60mL	125mL	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								
B161C4	SOIL	6-18-3	1305						X	X	X

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Soil/soot SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From R. PFISTER / RR	Date/Time 6-18-3 1444	Received By/Stored In MIO-026 FRIG #1	Date/Time 6-18-3 1444	The lab is to achieve a detection limit of 50.0 pCi/g for C-14. Report low range 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 radi characteristics.				
Relinquished By/Removed From MO-026 FRIG #1	Date/Time 6-19-03 0835	Received By/Stored In MACHURSEN BNA	Date/Time 6-19-03 0835					
Relinquished By/Removed From MACHURSEN BNA	Date/Time 6-19-03 0850	Received By/Stored In Red Box	Date/Time 6-19-03 0850					
Relinquished By/Removed From Red Box	Date/Time 6-20-03 10:20	Received By/Stored In RR CORRO JR CORRO	Date/Time 6-20-03 10:20					
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



EBERLINE
SERVICES

ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: Beechtel Stanford Date/Time received 6-16-03 10:50

CoC No. FD3-006-137

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

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
 2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
 3. Custody seals on sample containers intact? Yes [] No [] N/A []
 4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
 5. Packing material is: Wet [] Dry []
 6. Number of samples in shipping container: 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 JR Casco Date: 6-16-03 Time: 10:30

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

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

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



28 July 2003

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



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

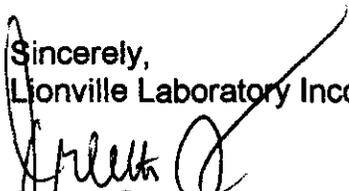
Dear Mr. Trent:

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

LvLI Batch #	0306L636/672
SDG #	H2268
SAF #	F03-006
Date Received	6-13/20-03
# Samples	2
Matrix	Soil
Volatiles	
Semivolatiles	X
Pest/PCB	
DRO/GRO/KRO	X
Herbicides	
GC Alcohol	X
Metals	X
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated


Orlette S. Johnson
Project Manager

Lionville Laboratory, Inc.
 BNA ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4	001	S	03LE0750	06/18/03	06/23/03	07/01/03
B161C4	001 MS	S	03LE0750	06/18/03	06/23/03	07/01/03
B161C4	001 MSD	S	03LE0750	06/18/03	06/23/03	07/01/03

LAB QC:

SBLKWG	MB1	S	03LE0750	N/A	06/23/03	06/27/03
SBLKWG	MB1 BS	S	03LE0750	N/A	06/23/03	06/27/03





Client: TNU-HANFORD F03-006
LVL #: 0306L672
SDG/SAF # H2268/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2003

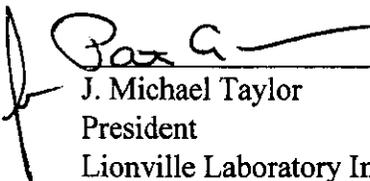
SEMIVOLATILE

One (1) soil sample was collected on 06-18-2003.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 06-23-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 06-27-2003 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 a sample that met LvLI's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
3. Non-target compounds were detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. 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").
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.



J. Michael Taylor
President
Lionville Laboratory Incorporated

07-17-03
Date

som\group\data\bna\tnu-hanford-0306-672.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

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.

Cust ID: B161C4 B161C4 B161C4 SBLKWG SBLKWG BS
 RFW#: 001 001 MS 001 MSD 03LE0750-MB1 03LE0750-MB1

2-Chloronaphthalene	350 U	350 U	350 U	330 U	330 U
2-Nitroaniline	860 U	860 U	860 U	840 U	840 U
Dimethylphthalate	350 U	350 U	350 U	330 U	330 U
Acenaphthylene	350 U	350 U	350 U	330 U	330 U
2,6-Dinitrotoluene	350 U	350 U	350 U	330 U	330 U
3-Nitroaniline	860 U	860 U	860 U	840 U	840 U
Acenaphthene	350 U	70 %	71 %	330 U	69 %
2,4-Dinitrophenol	860 U	860 U	860 U	840 U	840 U
4-Nitrophenol	860 U	73 %	74 %	840 U	76 %
Dibenzofuran	350 U	350 U	350 U	330 U	330 U
2,4-Dinitrotoluene	350 U	74 %	73 %	330 U	75 %
Diethylphthalate	350 U	350 U	350 U	330 U	330 U
4-Chlorophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Fluorene	350 U	350 U	350 U	330 U	330 U
4-Nitroaniline	860 U	860 U	860 U	840 U	840 U
4,6-Dinitro-2-methylphenol	860 U	860 U	860 U	840 U	840 U
N-Nitrosodiphenylamine (1)	350 U	350 U	350 U	330 U	330 U
4-Bromophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Hexachlorobenzene	350 U	350 U	350 U	330 U	330 U
Pentachlorophenol	860 U	68 %	64 %	840 U	68 %
Phenanthrene	350 U	350 U	350 U	330 U	330 U
Anthracene	350 U	350 U	350 U	330 U	330 U
Carbazole	350 U	350 U	350 U	330 U	330 U
Di-n-butylphthalate	350 U	350 U	350 U	330 U	330 U
Fluoranthene	350 U	350 U	350 U	330 U	330 U
Pyrene	350 U	78 %	78 %	330 U	71 %
Butylbenzylphthalate	350 U	350 U	350 U	330 U	330 U
3,3'-Dichlorobenzidine	350 U	350 U	350 U	330 U	330 U
Benzo (a) anthracene	350 U	350 U	350 U	330 U	330 U
Chrysene	350 U	350 U	350 U	330 U	330 U
bis (2-Ethylhexyl) phthalate	350 U	350 U	350 U	330 U	330 U
Di-n-octyl phthalate	350 U	350 U	350 U	330 U	330 U
Benzo (b) fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo (k) fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo (a) pyrene	350 U	350 U	350 U	330 U	330 U
Indeno (1,2,3-cd) pyrene	350 U	350 U	350 U	330 U	330 U
Dibenz (a,h) anthracene	350 U	350 U	350 U	330 U	330 U
Benzo (g,h,i) perylene	350 U	350 U	350 U	330 U	330 U
2-Butoxyethanol	350 U	350 U	350 U	330 U	330 U
Benzyl alcohol	350 U	350 U	350 U	330 U	330 U

*= Outside of EPA CLP QC limits.

Cust ID: B161C4 B161C4 B161C4 SBLKWG SBLKWG BS

RFW#: 001 001 MS 001 MSD 03LE0750-MB1 03LE0750-MB1

Tributylphosphate 350 U 350 U 350 U 330 U 330 U

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

8

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B161C4

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

Client: TNUHANFORD F03-006 H2268

Matrix: (soil/water) SOIL

Lab Sample ID: 0306L672-001

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

Lab File ID: D070105

Level: (low/med) LOW

Date Received: 06/20/03

% Moisture: 4 decanted: (Y/N)

Date Extracted: 06/23/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 07/01/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.404	400	JB
2.	ALDOL CONDENSATE	4.797	300	JAB
3.	ALDOL CONDENSATE	5.391	30000	JAB
4. 79-34-5	1,1,2,2-TETRACHLOROETHANE	6.665	80	JN

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKWG

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

Client: TNUHANFORD F03-006 H2268

Matrix: (soil/water) SOIL

Lab Sample ID: 03LE0750-MB1

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

Lab File ID: D062713

Level: (low/med) LOW

Date Received: 06/23/03

% Moisture: decanted: (Y/N)

Date Extracted: 06/23/03

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: 7.0

CONCENTRATION UNITS:

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.43	300	J
2.	ALDOL CONDENSATE	4.814	300	JA
3.	ALDOL CONDENSATE	5.417	30000	JA
4.	UNKNOWN	6.692	90	J



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

0306L672

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	A	B	C	D	E	
Est. Final Proj. Sampling Date	#/Type Container	Liquid	AGL <u>7/4/2013</u>				
Project # <u>11343-606-001-9999-00</u>		Solid	AGL	AGL	AGL	AGL	
Project Contact/Phone #	Volume	Liquid					
Lionville Laboratory Project Manager <u>OJ</u>		Solid	125	60	125	60	
QC <u>Spec</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives						
Date Rec'd <u>6/20/03</u> Date Due <u>7-20-03</u>	ANALYSES REQUESTED	ORGANIC		alk. ket. Glyc.	IC driving CN	INORG	
		VOA	BNA	Pest/PCB	Herb	Metal	CN

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 OC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				VOA	BNA	Pest/PCB	Herb	alk. ket. Glyc.	IC driving CN	Metal	CN	INORG	Oil/grease					
			0635	0640				0660	0650	0805	INORG	MET	INORG	IC/grease	IC/grease							
	001	BIGICH	X	S		6/18/03	1305	1					1									

Special Instructions: SAF ± F03-006

MET ⊕ = RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ⊕ = IC = Cl, F, NO₃, NO₂, PO₄, SO₄
INH3N, ZPH, ICNTD

SDG w/0306L636

DATE/REVISIONS:
6/20/03 1. Matrix QC not required; SDG w/0306L636
 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 Times 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. 1.4 °C

Relinquished by	Received by	Date	Time
FeedEX	J Perry	6/20/03	0940

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
7903 2388 7077

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-138		Page 1 of 1			
Collector <i>6-18-03 R. Johansen/Pope/Pfister</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 <i>6-18-3 RF</i> 216-B-12 (C3246); (294.S.297) <i>302-304.5'</i>			SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. <i>ERC 02-001</i>			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To <i>MS 6-9-03</i> EDERLINE SERVICES (Formerly TMA) <i>Freira</i>			Offsite Property No. <i>B030289</i>			Bill of Lading/Air Bill No. <i>SEK 05PC</i>							
POSSIBLE SAMPLE HAZARDS/REMARKS <i>RADIOACTIVE TIE TO: B171P7 B171P5 RC 6-19-03</i> Special Handling and/or Storage <i>COOL 4°C</i>				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	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.	See item (4) in Special Instructions.	NO2/NO3 - 353.2; O8 & Grease - 413.1; Chromium Hex - 7196	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tridium - H3		
Sample No.	Matrix *	Sample Date	Sample Time										
B161C4	SOIL	6-18-3	1305	X	X	X	X	X					
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From <i>R. PEISTER</i>		Date/Time <i>6-18-3 1444</i>		Received By/Stored In <i>MO-026 FR16 #1</i>		Date/Time <i>6-18-3 1444</i>		<p>The lab is to achieve a detection limit of 50.0 µg/g for C-44. 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 radi characteristics.</p> <p>(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-153, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Th-232); Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Lanthanum (C-14, F-18, I-129, I-131, I-135, Neptunium-237, Pu-239, Pu-240, Pu-241, Pu-242, Pu-244, Pu-246, Pu-248, Pu-250, Pu-252, Pu-254, Pu-256, Pu-258, Pu-260, Pu-262, Pu-264, Pu-266, Pu-268, Pu-270, Pu-272, Pu-274, Pu-276, Pu-278, Pu-280, Pu-282, Pu-284, Pu-286, Pu-288, Pu-290, Pu-292, Pu-294, Pu-296, Pu-298, Pu-300, Pu-302, Pu-304, Pu-306, Pu-308, Pu-310, Pu-312, Pu-314, Pu-316, Pu-318, Pu-320, Pu-322, Pu-324, Pu-326, Pu-328, Pu-330, Pu-332, Pu-334, Pu-336, Pu-338, Pu-340, Pu-342, Pu-344, Pu-346, Pu-348, Pu-350, Pu-352, Pu-354, Pu-356, Pu-358, Pu-360, Pu-362, Pu-364, Pu-366, Pu-368, Pu-370, Pu-372, Pu-374, Pu-376, Pu-378, Pu-380, Pu-382, Pu-384, Pu-386, Pu-388, Pu-390, Pu-392, Pu-394, Pu-396, Pu-398, Pu-400, Pu-402, Pu-404, Pu-406, Pu-408, Pu-410, Pu-412, Pu-414, Pu-416, Pu-418, Pu-420, Pu-422, Pu-424, Pu-426, Pu-428, Pu-430, Pu-432, Pu-434, Pu-436, Pu-438, Pu-440, Pu-442, Pu-444, Pu-446, Pu-448, Pu-450, Pu-452, Pu-454, Pu-456, Pu-458, Pu-460, Pu-462, Pu-464, Pu-466, Pu-468, Pu-470, Pu-472, Pu-474, Pu-476, Pu-478, Pu-480, Pu-482, Pu-484, Pu-486, Pu-488, Pu-490, Pu-492, Pu-494, Pu-496, Pu-498, Pu-500, Pu-502, Pu-504, Pu-506, Pu-508, Pu-510, Pu-512, Pu-514, Pu-516, Pu-518, Pu-520, Pu-522, Pu-524, Pu-526, Pu-528, Pu-530, Pu-532, Pu-534, Pu-536, Pu-538, Pu-540, Pu-542, Pu-544, Pu-546, Pu-548, Pu-550, Pu-552, Pu-554, Pu-556, Pu-558, Pu-560, Pu-562, Pu-564, Pu-566, Pu-568, Pu-570, Pu-572, Pu-574, Pu-576, Pu-578, Pu-580, Pu-582, Pu-584, Pu-586, Pu-588, Pu-590, Pu-592, Pu-594, Pu-596, Pu-598, Pu-600, Pu-602, Pu-604, Pu-606, Pu-608, Pu-610, Pu-612, Pu-614, Pu-616, Pu-618, Pu-620, Pu-622, Pu-624, Pu-626, Pu-628, Pu-630, Pu-632, Pu-634, Pu-636, Pu-638, Pu-640, Pu-642, Pu-644, Pu-646, Pu-648, Pu-650, Pu-652, Pu-654, Pu-656, Pu-658, Pu-660, Pu-662, Pu-664, Pu-666, Pu-668, Pu-670, Pu-672, Pu-674, Pu-676, Pu-678, Pu-680, Pu-682, Pu-684, Pu-686, Pu-688, Pu-690, Pu-692, Pu-694, Pu-696, Pu-698, Pu-700, Pu-702, Pu-704, Pu-706, Pu-708, Pu-710, Pu-712, Pu-714, Pu-716, Pu-718, Pu-720, Pu-722, Pu-724, Pu-726, Pu-728, Pu-730, Pu-732, Pu-734, Pu-736, Pu-738, Pu-740, Pu-742, Pu-744, Pu-746, Pu-748, Pu-750, Pu-752, Pu-754, Pu-756, Pu-758, Pu-760, Pu-762, Pu-764, Pu-766, Pu-768, Pu-770, Pu-772, Pu-774, Pu-776, Pu-778, Pu-780, Pu-782, Pu-784, Pu-786, Pu-788, Pu-790, Pu-792, Pu-794, Pu-796, Pu-798, Pu-800, Pu-802, Pu-804, Pu-806, Pu-808, Pu-810, Pu-812, Pu-814, Pu-816, Pu-818, Pu-820, Pu-822, Pu-824, Pu-826, Pu-828, Pu-830, Pu-832, Pu-834, Pu-836, Pu-838, Pu-840, Pu-842, Pu-844, Pu-846, Pu-848, Pu-850, Pu-852, Pu-854, Pu-856, Pu-858, Pu-860, Pu-862, Pu-864, Pu-866, Pu-868, Pu-870, Pu-872, Pu-874, Pu-876, Pu-878, Pu-880, Pu-882, Pu-884, Pu-886, Pu-888, Pu-890, Pu-892, Pu-894, Pu-896, Pu-898, Pu-900, Pu-902, Pu-904, Pu-906, Pu-908, Pu-910, Pu-912, Pu-914, Pu-916, Pu-918, Pu-920, Pu-922, Pu-924, Pu-926, Pu-928, Pu-930, Pu-932, Pu-934, Pu-936, Pu-938, Pu-940, Pu-942, Pu-944, Pu-946, Pu-948, Pu-950, Pu-952, Pu-954, Pu-956, Pu-958, Pu-960, Pu-962, Pu-964, Pu-966, Pu-968, Pu-970, Pu-972, Pu-974, Pu-976, Pu-978, Pu-980, Pu-982, Pu-984, Pu-986, 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Pu-2098, Pu-2100, Pu-2102, Pu-2104, Pu-2106, Pu-2108, Pu-2110, Pu-2112, Pu-2114, Pu-2116, Pu-2118, Pu-2120, Pu-2122, Pu-2124, Pu-2126, Pu-2128, Pu-2130, Pu-2132, Pu-2134, Pu-2136, Pu-2138, Pu-2140, Pu-2142, Pu-2144, Pu-2146, Pu-2148, Pu-2150, Pu-2152, Pu-2154, Pu-2156, Pu-2158, Pu-2160, Pu-2162, Pu-2164, Pu-2166, Pu-2168, Pu-2170, Pu-2172, Pu-2174, Pu-2176, Pu-2178, Pu-2180, Pu-2182, Pu-2184, Pu-2186, Pu-2188, Pu-2190, Pu-2192, Pu-2194, Pu-2196, Pu-2198, Pu-2200, Pu-2202, Pu-2204, Pu-2206, Pu-2208, Pu-2210, Pu-2212, Pu-2214, Pu-2216, Pu-2218, Pu-2220, Pu-2222, Pu-2224, Pu-2226, Pu-2228, Pu-2230, Pu-2232, Pu-2234, Pu-2236, Pu-2238, Pu-2240, Pu-2242, Pu-2244, Pu-2246, Pu-2248, Pu-2250, Pu-2252, Pu-2254, Pu-2256, Pu-2258, Pu-2260, Pu-2262, Pu-2264, Pu-2266, Pu-2268, Pu-2270, Pu-2272, Pu-2274, Pu-2276, Pu-2278, Pu-2280, Pu-2282, Pu-2284, Pu-2286, Pu-2288, Pu-2290, Pu-2292, Pu-2294, Pu-2296, Pu-2298, Pu-2300, Pu-2302, Pu-2304, Pu-2306, Pu-2308, Pu-2310, Pu-2312, Pu-2314, Pu-2316, Pu-2318, Pu-2320, Pu-2322, Pu-2324, Pu-2326, Pu-2328, Pu-2330, Pu-2332, Pu-2334, Pu-2336, Pu-2338, Pu-2340, Pu-2342, Pu-2344, Pu-2346, Pu-2348, Pu-2350, Pu-2352, Pu-2354, Pu-2356, Pu-2358, Pu-2360, Pu-2362, Pu-2364, Pu-2366, Pu-2368, Pu-2370, Pu-2372, Pu-2374, Pu-2376, Pu-2378, Pu-2380, Pu-2382, Pu-2384, Pu-2386, Pu-2388, Pu-2390, Pu-2392, Pu-2394, Pu-2396, Pu-2398, Pu-2400, Pu-2402, Pu-2404, Pu-2406, Pu-2408, Pu-2410, Pu-2412, Pu-2414, Pu-2416, Pu-2418, Pu-2420, Pu-2422, Pu-2424, Pu-2426, Pu-2428, Pu-2430, Pu-2432, Pu-2434, Pu-2436, Pu-2438, Pu-2440, Pu-2442, Pu-2444, Pu-2446, Pu-2448, Pu-2450, Pu-2452, Pu-2454, Pu-2456, Pu-2458, Pu-2460, Pu-2462, Pu-2464, Pu-2466, Pu-2468, Pu-2470, Pu-2472, Pu-2474, Pu-2476, Pu-2478, Pu-2480, Pu-2482, Pu-2484, Pu-2486, Pu-2488, Pu-2490, Pu-2492, Pu-2494, Pu-2496, Pu-2498, Pu-2500, Pu-2502, Pu-2504, Pu-2506, Pu-2508, Pu-2510, Pu-2512, Pu-2514, Pu-2516, Pu-2518, Pu-2520, Pu-2522, Pu-2524, Pu-2526, Pu-2528, Pu-2530, Pu-2532, Pu-2534, Pu-2536, Pu-2538, Pu-2540, Pu-2542, Pu-2544, Pu-2546, Pu-2548, Pu-2550, Pu-2552, Pu-2554, Pu-2556, Pu-2558, Pu-2560, Pu-2562, Pu-2564, Pu-2566, Pu-2568, Pu-2570, Pu-2572, Pu-2574, Pu-2576, Pu-2578, Pu-2580, Pu-2582, Pu-2584, Pu-2586, Pu-2588, Pu-2590, Pu-2592, Pu-2594, Pu-2596, Pu-2598, Pu-2600, Pu-2602, Pu-2604, Pu-2606, Pu-2608, Pu-2610, Pu-2612, Pu-2614, Pu-2616, Pu-2618, Pu-2620, Pu-2622, Pu-2624, Pu-2626, Pu-2628, Pu-2630, Pu-2632, Pu-2634, Pu-2636, Pu-2638, Pu-2640, Pu-2642, Pu-2644, Pu-2646, Pu-2648, Pu-2650, Pu-2652, Pu-2654, Pu-2656, Pu-2658, Pu-2660, Pu-2662, Pu-2664, Pu-2666, Pu-2668, Pu-2670, Pu-2672, Pu-2674, Pu-2676, Pu-2678, Pu-2680, Pu-2682, Pu-2684, Pu-2686, Pu-2688, Pu-2690, Pu-2692, Pu-2694, Pu-2696, Pu-2698, Pu-2700, Pu-2702, Pu-2704, Pu-2706, Pu-2708, Pu-2710, Pu-2712, Pu-2714, Pu-2716, Pu-2718, Pu-2720, Pu-2722, Pu-2724, Pu-2726, Pu-2728, Pu-2730, Pu-2732, Pu-2734, Pu-2736, Pu-2738, Pu-2740, Pu-2742, Pu-2744, Pu-2746, Pu-2748, Pu-2750, Pu-2752, Pu-2754, Pu-2756, Pu-2758, Pu-2760, Pu-2762, Pu-2764, Pu-2766, Pu-2768, Pu-2770, Pu-2772, Pu-2774, Pu-2776, Pu-2778, Pu-2780, Pu-2782, Pu-2784, Pu-2786, Pu-2788, Pu-2790, Pu-2792, Pu-2794, Pu-2796, Pu-2798, Pu-2800, Pu-2802, Pu-2804, Pu-2806, Pu-2808, Pu-2810, Pu-2812, Pu-2814, Pu-2816, Pu-2818, Pu-2820, Pu-2822, Pu-2824, Pu-2826, Pu-2828, Pu-2830, Pu-2832, Pu-2834, Pu-2836, Pu-2838, Pu-2840, Pu-2842, Pu-2844, Pu-2846, Pu-2848, Pu-2850, Pu-2852, Pu-2854, Pu-2856, Pu-2858, Pu-2860, Pu-2862, Pu-2864, Pu-2866, Pu-2868, Pu-2870, Pu-2872, Pu-2874, Pu-2876, Pu-2878, Pu-2880, Pu-2882, Pu-2884, Pu-2886, Pu-2888, Pu-2890, Pu-2892, Pu-2894, Pu-2896, Pu-2898, Pu-2900, Pu-2902, Pu-2904, Pu-2906, Pu-2908, Pu-2910, Pu-2912, Pu-2914, Pu-2916, Pu-2918, Pu-2920, Pu-2922, Pu-2924, Pu-2926, Pu-2928, Pu-2930, Pu-2932, Pu-2934, Pu-2936, Pu-2938, Pu-2940, Pu-2942, Pu-2944, Pu-2946, Pu-2948, Pu-2950, Pu-2952, Pu-2954, Pu-2956, Pu-2958, Pu-2960, Pu-2962, Pu-2964, Pu-2966, Pu-2968, Pu-2970, Pu-2972, Pu-2974, Pu-2976, Pu-2978, Pu-2980, Pu-2982, Pu-2984, 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Pu-3208, Pu-3210, Pu-3212, Pu-3214, Pu-3216, Pu-3218, Pu-3220, Pu-3222, Pu-3224, Pu-3226, Pu-3228, Pu-3230, Pu-3232, Pu-3234, Pu-3236, Pu-3238, Pu-3240, Pu-3242, Pu-3244, Pu-3246, Pu-3248, Pu-3250, Pu-3252, Pu-3254, Pu-3256, Pu-3258, Pu-3260, Pu-3262, Pu-3264, Pu-3266, Pu-3268, Pu-3270, Pu-3272, Pu-3274, Pu-3276, Pu-3278, Pu-3280, Pu-3282, Pu-3284, Pu-3286, Pu-3288, Pu-3290, Pu-3292, Pu-3294, Pu-3296, Pu-3298, Pu-3300, Pu-3302, Pu-3304, Pu-3306, Pu-33</p>					

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hamford

Purchase Order/Project:

DATE: 6-20-03

FWY SOW# / Release #: F03-006

Laboratory SDG #:

03064672

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:

Cell 02-001 / 1.4°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

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Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3	001	S	03LE0733	06/13/03	06/17/03	06/30/03
B161C3	001 MS	S	03LE0733	06/13/03	06/17/03	06/30/03
B161C3	001 MSD	S	03LE0733	06/13/03	06/17/03	06/30/03

LAB QC:

SBLKVU	MB1	S	03LE0733	N/A	06/17/03	06/27/03
SBLKVU	MB1 BS	S	03LE0733	N/A	06/17/03	06/27/03





Client: TNU-HANFORD F03-006
LVL #: 0306L636
SDG/SAF # H2268/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 06-14-2003

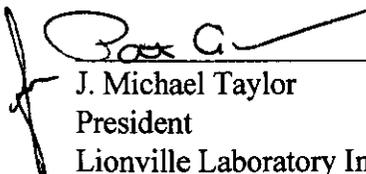
SEMIVOLATILE

One (1) soil sample was collected on 06-13-2003.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 06-17-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 06-27,30-2003.

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

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
3. Non-target compounds were detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Bis (2-Ethylhexyl) phthalate and Di-n-butylphthalate at levels 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

07-10-03
Date

som\group\data\bna\tnu-hanford-0306-636.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 1 3 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.

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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: 07/07/03 15:07

RFW Batch Number: 0306L636

Client: TNUHANFORD F03-006 H2268

Work Order: 11343606001

Page: 1a

Sample Information	Cust ID:	B161C3	B161C3	B161C3	SBLKVU	SBLKVU BS
	RFW#:	001	001 MS	001 MSD	03LE0733-MB1	03LE0733-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	Nitrobenzene-d5	68 %	62 %	63 %	68 %	63 %
Recovery	2-Fluorobiphenyl	66 %	62 %	64 %	70 %	68 %
	Terphenyl-d14	86 %	72 %	80 %	91 %	85 %
	Phenol-d5	64 %	59 %	60 %	64 %	61 %
	2-Fluorophenol	62 %	61 %	58 %	62 %	58 %
	2,4,6-Tribromophenol	70 %	59 %	67 %	71 %	72 %
=====f1=====f1=====f1=====f1=====f1=====						
	Phenol	340 U	59 %	61 %	330 U	63 %
	bis(2-Chloroethyl) ether	340 U	340 U	340 U	330 U	330 U
	2-Chlorophenol	340 U	57 %	56 %	330 U	60 %
	1,3-Dichlorobenzene	340 U	340 U	340 U	330 U	330 U
	1,4-Dichlorobenzene	340 U	57 %	56 %	330 U	60 %
	1,2-Dichlorobenzene	340 U	340 U	340 U	330 U	330 U
	2-Methylphenol	340 U	340 U	340 U	330 U	330 U
	2,2'-oxybis(1-Chloropropane)	340 U	340 U	340 U	330 U	330 U
	3- and/or 4-Methylphenol	340 U	340 U	340 U	330 U	330 U
	N-Nitroso-di-n-propylamine	340 U	58 %	60 %	330 U	64 %
	Hexachloroethane	340 U	340 U	340 U	330 U	330 U
	Nitrobenzene	340 U	340 U	340 U	330 U	330 U
	Isophorone	340 U	340 U	340 U	330 U	330 U
	2-Nitrophenol	340 U	340 U	340 U	330 U	330 U
	2,4-Dimethylphenol	340 U	340 U	340 U	330 U	330 U
	bis(2-Chloroethoxy)methane	340 U	340 U	340 U	330 U	330 U
	2,4-Dichlorophenol	340 U	340 U	340 U	330 U	330 U
	1,2,4-Trichlorobenzene	340 U	56 %	55 %	330 U	60 %
	Naphthalene	340 U	340 U	340 U	330 U	330 U
	4-Chloroaniline	340 U	340 U	340 U	330 U	330 U
	Hexachlorobutadiene	340 U	340 U	340 U	330 U	330 U
	4-Chloro-3-methylphenol	340 U	56 %	63 %	330 U	68 %
	2-Methylnaphthalene	340 U	340 U	340 U	330 U	330 U
	Hexachlorocyclopentadiene	340 U	340 U	340 U	330 U	330 U
	2,4,6-Trichlorophenol	340 U	340 U	340 U	330 U	330 U
	2,4,5-Trichlorophenol	860 U	860 U	860 U	840 U	840 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B161C3	B161C3	B161C3	SBLKVU	SBLKVU BS
	RFW#:	001	001 MS	001 MSD	03LE0733-MB1	03LE0733-MB1
2-Chloronaphthalene		340 U	340 U	340 U	330 U	330 U
2-Nitroaniline		860 U	860 U	860 U	840 U	840 U
Dimethylphthalate		340 U	340 U	340 U	330 U	330 U
Acenaphthylene		340 U	340 U	340 U	330 U	330 U
2,6-Dinitrotoluene		340 U	340 U	340 U	330 U	330 U
3-Nitroaniline		860 U	860 U	860 U	840 U	840 U
Acenaphthene		340 U	59 %	65 %	330 U	69 %
2,4-Dinitrophenol		860 U	860 U	860 U	840 U	840 U
4-Nitrophenol		860 U	61 %	74 %	840 U	81 %
Dibenzofuran		340 U	340 U	340 U	330 U	330 U
2,4-Dinitrotoluene		340 U	60 %	72 %	330 U	78 %
Diethylphthalate		340 U	340 U	340 U	330 U	330 U
4-Chlorophenyl-phenylether		340 U	340 U	340 U	330 U	330 U
Fluorene		340 U	340 U	340 U	330 U	330 U
4-Nitroaniline		860 U	860 U	860 U	840 U	840 U
4,6-Dinitro-2-methylphenol		860 U	860 U	860 U	840 U	840 U
N-Nitrosodiphenylamine (1)		340 U	340 U	340 U	330 U	330 U
4-Bromophenyl-phenylether		340 U	340 U	340 U	330 U	330 U
Hexachlorobenzene		340 U	340 U	340 U	330 U	330 U
Pentachlorophenol		860 U	55 %	66 %	840 U	77 %
Phenanthrene		340 U	340 U	340 U	330 U	330 U
Anthracene		340 U	340 U	340 U	330 U	330 U
Carbazole		340 U	340 U	340 U	330 U	330 U
Di-n-butylphthalate		46 JB	24 JB	33 JB	18 J	21 JB
Fluoranthene		340 U	340 U	340 U	330 U	330 U
Pyrene		340 U	61 %	69 %	330 U	76 %
Butylbenzylphthalate		340 U	340 U	340 U	330 U	330 U
3,3'-Dichlorobenzidine		340 U	340 U	340 U	330 U	330 U
Benzo (a) anthracene		340 U	340 U	340 U	330 U	330 U
Chrysene		340 U	340 U	340 U	330 U	330 U
bis (2-Ethylhexyl) phthalate		20 JB	340 U	340 U	21 J	330 U
Di-n-octyl phthalate		340 U	340 U	340 U	330 U	330 U
Benzo (b) fluoranthene		340 U	340 U	340 U	330 U	330 U
Benzo (k) fluoranthene		340 U	340 U	340 U	330 U	330 U
Benzo (a) pyrene		340 U	340 U	340 U	330 U	330 U
Indeno (1,2,3-cd) pyrene		340 U	340 U	340 U	330 U	330 U
Dibenz (a,h) anthracene		340 U	340 U	340 U	330 U	330 U
Benzo (g,h,i) perylene		340 U	340 U	340 U	330 U	330 U
2-Butoxyethanol		340 U	340 U	340 U	330 U	330 U
Benzyl alcohol		340 U	340 U	340 U	330 U	330 U

*= Outside of EPA CLP QC limits.

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Cust ID: B161C3 B161C3 B161C3 SBLKVU SBLKVU BS

RFW#: 001 001 MS 001 MSD 03LE0733-MB1 03LE0733-MB1

Tributylphosphate 340 U 340 U 340 U 330 U 330 U

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

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B161C3

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

Client: TNUHANFORD F03-006 H2268

Matrix: (soil/water) SOIL

Lab Sample ID: 0306L636-001

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

Lab File ID: D063013

Level: (low/med) LOW

Date Received: 06/14/03

% Moisture: 3 decanted: (Y/N) __

Date Extracted: 06/17/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/30/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 79-00-5	1,1,2-TRICHOLORETHANE	3.952	80	JBN
2.	UNKNOWN	4.415	200	JB
3.	ALDOL CONDENSATE	4.799	100	JAB
4.	ALDOL CONDENSATE	5.340	10000	JAB
5. 79-34-5	1,1,2,2-TETRACHLOROETHANE	6.659	100	JBN

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKVU

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

Client: TNUHANFORD F03-006 H2268

Matrix: (soil/water) SOIL

Lab Sample ID: 03LE0733-MB1

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

Lab File ID: D062711

Level: (low/med) LOW

Date Received: 06/17/03

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

Date Extracted: 06/17/03

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: 7.0

CONCENTRATION UNITS:

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 79-00-5	1,1,2-TRICHLOROETHANE	3.961	70	JN
2.	UNKNOWN	4.433	200	J
3.	ALDOL CONDENSATE	4.808	100	JA
4.	ALDOL CONDENSATE	5.341	10000	JA
5. 79-34-5	1,1,2,2-TETRACHLOROETHANE	6.668	100	JN



0306L636

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU Hanford F03-006</u>	Refrigerator #	A	B	C	D	E	F
Est. Final Proj. Sampling Date	#/Type Container	Liquid					
Project # <u>11343-606-001-9999-00</u>		Solid	<u>10g</u>	<u>10g</u>	<u>10g</u>	<u>10g</u>	<u>10g</u>
Project Contact/Phone #	Volume	Liquid					
Lionville Laboratory Project Manager <u>Delette Johnson</u>		Solid	<u>250</u>	<u>60</u>	<u>60</u>	<u>125</u>	<u>60</u>
QC <u>SPEC.</u> Del <u>Std.</u> TAT <u>30 days</u>	Preservatives		<u>1</u>		<u>1</u>	<u>1</u>	<u>1</u>
Date Rec'd <u>6/14/03</u> Date Due <u>7/14/03</u>	ANALYSES REQUESTED	ORGANIC			INORG		
		VOA	BNA (2)	Pest/PCB	Herb	Alcohol/Solids (1)	Metal (3)
							IC (4)
							Amid
							NO3/NO2
							ClB
							Hex
							Chlor

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				0625X	0620, 0621	0605C	met. ①	Inorg ①	IN3N-IC06R	IC06									
	<u>001</u>	<u>B161C3</u>	<u>X</u>	<u>X</u>	<u>S</u>	<u>6/13/03</u>	<u>0900</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>								

Special Instructions: Saf # F03-006

DATE/REVISIONS:

met ① 1. RCRA + Sb, Be, Bi, B, Cu, Ni

Inorg ① 2. IC = Cl, F, NO₃, NO₂, PO₄, SO₄, INH3N, IPH, ICNTD

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 Times 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. 03 °C

Relinquished by	Received by	Date	Time
<u>Dee Ex</u>	<u>D. Johnson</u>	<u>6/14/03</u>	<u>10:05</u>

Relinquished by	Received by	Date	Time
ORIGINAL	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 7929 0867 4975

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-137		Page 1 of 1			
Collector Johansen/Pope/Pfister/Hughes			Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-B-12 (C3246); (247.5-250')		SAF No. F03-006		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 02-405			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To EDERLINE SERVICES (Formerly TMA) <i>Arera</i>			Offsite Property No. <i>A030 287</i>		Bill of Lading/Air Bill No. <i>SEE OSR</i>								
POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: B171P6 <i>gpc 6-13-03</i> Tie to B171P5 Radioactive Special Handling and/or Storage <i>cool 40c</i>				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	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.	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										
B161C3	SOIL	6-13-03	0900	X	X	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 lab is to achieve a detection limit of 50.0 $\mu\text{g/g}$ 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 radl characteristics. (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 (6) 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; Carbon-14; Carbon-13; Carbon-12; Nitrogen-15; Nitrogen-14; Nitrogen-13 (10) Tech 99, Sr-89, Sr-90 - Total Sr; Isotopic Thorium (Thorium-232)				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other	
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							
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 Hanford
Purchase Order/Project:

DATE: 6-14-03

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

Laboratory SDG #: 03062636

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-02-405 / 0.3°C

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

Lionville Laboratory, Inc.
 GRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3	001	S	03LVJ626	06/13/03	N/A	06/26/03
B161C3	001 MS	S	03LVJ626	06/13/03	N/A	06/26/03
B161C3	001 MSD	S	03LVJ626	06/13/03	N/A	06/26/03

LAB QC:

TBLKKN	MB1	S	03LVJ626	N/A	N/A	06/26/03
TBLKKN	MB1 BS	S	03LVJ626	N/A	N/A	06/26/03

prints



Lionville Laboratory, Inc.
 GRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4	001	S	03LVJ626	06/18/03	N/A	06/26/03
B161C4	001 R1	S	03LVJ714	06/18/03	N/A	07/14/03
B161C4	001 MS R1	S	03LVJ714	06/18/03	N/A	07/14/03
B161C4	001 MSD R1	S	03LVJ714	06/18/03	N/A	07/14/03

LAB QC:

TBLKKN	MB1	S	03LVJ626	N/A	N/A	06/26/03
TBLKKN	MB1 BS	S	03LVJ626	N/A	N/A	06/26/03
TBLKPP	MB1	S	03LVJ714	N/A	N/A	07/14/03
TBLKPP	MB1 BS	S	03LVJ714	N/A	N/A	07/14/03

Handwritten signature/initials



Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0306L636;0306L672
SDG/SAF #: H2268/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 06-14,20-03

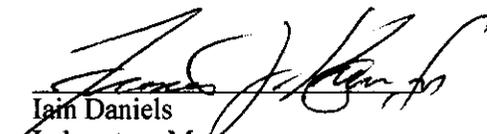
GASOLINE RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 06-13,18-03.

The samples and their associated QC samples were prepped and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-26-03 and 07-14-03. The analysis procedure was based on method 8015B. The analysis met the intent of method WTPH-G.

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. Sample B161C4 was originally prepped and analyzed within its required holding time. Due to the sample being inadvertently spiked, the sample was re-prepped outside of hold time. Both the original and the re-prepped results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. 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.


Ian Daniels
Laboratory Manager
Lionville Laboratory Incorporated
pefr:\group\data\gro\tnu hanford\06L-63667.2.doc

7/15/03
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 14 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: 07/11/03 06:59

RFW Batch Number: 0306L636

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

17

	Cust ID:	B161C3	B161C3	B161C3	TBLKKN	TBLKKN BS
Sample	RFW#:	001	001 MS	001 MSD	03LVJ626-MB1	03LVJ626-MB1
Information	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
	Fluorobenzene	83 %	84 %	86 %	100 %	102 %
	=====fl=====					
Gasoline Range Organics (GRO)		30 U	85 %	87 %	30 U	106 %

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

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 07/14/03 15:13

RFW Batch Number: 0306L672

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

	Cust ID:	B161C4	B161C4	B161C4	B161C4	TBLKKN	TBLKKN BS
Sample Information	RFW#:	001	001	001 MS	001 MSD	03LVJ626-MB1	03LVJ626-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
			REPREP	REPREP	REPREP		
	Fluorobenzene	85 %	85 %	71 %	73 %	100 %	102 %
	Gasoline Range Organics (GRO)	370	30 U	87 %	76 %	30 U	106 %

	Cust ID:	TBLKPP	TBLKPP BS
Sample Information	RFW#:	03LVJ714-MB1	03LVJ714-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
	Fluorobenzene	93 %	94 %
	Gasoline Range Organics (GRO)	30 U	100 %

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

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-137		Page 1 of 1					
Collector Johansen/Pope/Pfister/Hughes		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days				
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-B-12 (C3246); (247.5-250')			SAF No. F03-006		Air Quality <input type="checkbox"/>							
Ice Chest No. ERC 02-405		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express								
Shipped To EDERLINE SERVICES (Formerly TMA) <i>TRCRA</i>		Offsite Property No. A030 287			Bill of Lading/Air Bill No. SEE OSR									
POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO B171P5 <i>gpc 6-13-03</i> Tie to B171P5 Radioactive Special Handling and/or Storage <i>COOL 40C</i>				Preservation	Cool 4C	Cool 4C	None	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	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.	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											
B161C3	SOIL	6-13-03	0900	X	X	X	X	X						
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS <i>gpc 6-12-03</i>				Matrix *		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		The lab is to achieve a detection limit of 50.0 µg/g for C+H. 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) 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, Carbon-14, Iodine-129, Nickel-63, Technetium-99, Sr-90, Total S-C, Isotopic Thorium (Thorium-232)) <i>gpc 6-12-03</i>				S-Soil		
S.S. POPE <i>gpc</i>		6-13-03 1120		Greg Thomas <i>gpc</i>		6-13-03 1120								
Greg Thomas <i>gpc</i>		6-13-03 1125		ERC		1125								
K. FALL <i>gpc</i>		6-13-03 1125		Fed Ex										
Ded En		6-14-03/10:05		D. D. D.		6-14-03/10:05								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		SE-Sediment						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		SO-Solid						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		SL-Sediment						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		W-Water						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		O-Oil						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		A-Air						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		DS-Drawn Solids						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		DL-Drawn Liquids						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		T-Tissue						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		W-Wipe						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		L-Liquid						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		V-Vegetation						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		X-Other						
LABORATORY SECTION	Received By			Title				Date/Time						
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By				Date/Time						

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford
Purchase Order/Project:

DATE: 6.14.03

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

Laboratory SDG #: 0306L636

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-02-405 / 0.3°C

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



0306L672

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	A	B	C	D	E
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid	Liquid	Liquid	Liquid	Liquid
Project # <u>11343-606-001-1999-00</u>		Solid	Solid	Solid	Solid	Solid
Project Contact/Phone # _____	Volume	Liquid	Liquid	Liquid	Liquid	Liquid
Lionville Laboratory Project Manager <u>OJ</u>		Solid	Solid	Solid	Solid	Solid
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives					

Date Rec'd <u>6/20/03</u>	Date Due <u>7-20-03</u>	ANALYSES REQUESTED	ORGANIC	INORG
			VOA BNA Pest/PCB Herb	Metal N
			Oil/Ket. Glyc. Ie. Arising CN	Oil/grease Cr6

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 OC Chosen (S)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only									
			MS	MSD				0615X	0700	0800	0605C	0805	INORG	MET	INORG	Oil/grease	Cr6
	001	B1614	X	X	S	6/18/03	1305	1		1	1	1	1				

Special Instructions: SAF # F03-006

MET @: RCRA + Sb, Be, Bi, B, Cu, Ni

INORG @: IC = Cl, F, NO₃, NO₂, PO₄, SO₄
INH3N, ZPH, ICNTD

SDG W/0306L636

DATE/REVISIONS:

6/20/03 1. Matrix QC not required; SDG W/0306L636

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
2) Ambient or Chilled _____	COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N
3) Received in Good Condition <input checked="" type="checkbox"/> or N	Cooler Temp. <u>1.4</u> °C
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>FeedEx</u>	<u>J Perry</u>	<u>6/20/03</u>	<u>0940</u>

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
7903 2388 7077

**COMPOSITE ORIGINAL
WASTE - REWRITTEN**

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-138		Page 1 of 1	
Collector <i>W-1000 R</i> Lobanov/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location <i>6-18-3 RP</i> 216-B-12 (C3246); (294.5-297) <i>302-304.5'</i>		SAF No. F03-006		Air Quality <input type="checkbox"/>		Data Turnaround 45 Days	
Ice Chest No. <i>ERC 02-001</i>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To <i>Mrs L-9-03</i> EDERLINE SERVICES (Formerly TMA) <i>Relca</i>		Offsite Property No. <i>030289</i>				Bill of Lading/Air Bill No. <i>SEE O/SR</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: <i>B1747 B171P5</i> <i>RF 6-18-03</i> Special Handling and/or Storage <i>COOL 4°C</i>	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	1	1	1	1	1
	Volume	60mL	125mL	60mL	125mL	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.	Tridium - H3
------------------------	--	--	--	---------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	--	---------------------------------------	---------------------------------------	--------------

Sample No.	Matrix *	Sample Date	Sample Time								
B161C4	SOIL	6-18-3	1305	X	X	X	X	X			

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		The lab is to achieve a detection limit of 50.0 µg/g for C+4. 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 rail characteristics. (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, (C-14), (F-18), (N-13), Neptunium-237, Technetium-99, Sr-90, Total Sr, Isotopic Thorium (Th-230, 232); (6) Total Ar, Sr-90, Total Sr, Isotopic Thorium (Th-230, 232);	
<i>R. PFISTER</i>		<i>6-18-3 1444</i>		<i>MO-026 FRIG #1</i>		<i>6-18-3 1444</i>			
<i>MO-026 FRIG #1</i>		<i>6-19-03 0835</i>		<i>M. Hansen</i>		<i>6-19-03 0835</i>			
<i>M. Hansen</i>		<i>6-19-03 0850</i>		<i>Fed Ex</i>		<i>6-19-03 0850</i>			
<i>Fed Ex</i>		<i>6/20/03 0940</i>		<i>J. Kery</i>		<i>6/20/03 0940</i>			
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

13

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hamford
Purchase Order/Project:

DATE: 6.20.03

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

Laboratory SDG #:

03064672

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:

Cell 02-001 / 1.4°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
 DRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3	001	S	03LE0732	06/13/03	06/17/03	07/08/03
B161C3	001 MS	S	03LE0732	06/13/03	06/17/03	07/08/03
B161C3	001 MSD	S	03LE0732	06/13/03	06/17/03	07/08/03

LAB QC:

BLK	MB1	S	03LE0732	N/A	06/17/03	07/08/03
BLK	MB1 BS	S	03LE0732	N/A	06/17/03	07/08/03

AS 7/14/03



Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4	001	S	03LE0751	06/18/03	06/23/03	07/11/03
B161C4	001 MS	S	03LE0751	06/18/03	06/23/03	07/11/03
B161C4	001 MSD	S	03LE0751	06/18/03	06/23/03	07/11/03

LAB QC:

BLK	MB1	S	03LE0751	N/A	06/23/03	07/11/03
BLK	MB1 BS	S	03LE0751	N/A	06/23/03	07/11/03

Handwritten signature and date: Xs 7/11/03



Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0306L636;0306L672
SDG/SAF #: H2268/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 06-14,20-03

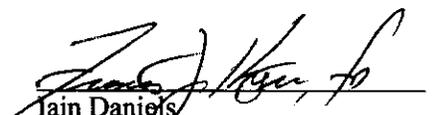
DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 06-13,18-03.

The samples and their associated QC samples were extracted on 06-17,23-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 07-08,11-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All method blanks were below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were 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
pefr:\group\data\gro\tnu hanford\06L-63667.2.doc

2/15/03
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 10 pages.



GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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



GLOSSARY OF DIESEL RANGE ORGANICS DATA

- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/11/03 06:18

RFW Batch Number: 0306L636

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

	Cust ID:	B161C3	B161C3	B161C3	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	03LE0732-MB1	03LE0732-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	88 %	66 %	61 %	77 %	78 %
		fl	fl	fl	fl	fl
Diesel Range Organics		12.3 U	68 %	65 %	12.0 U	75 %
Kerosene		12.3 U	12.3 U	12.3 U	12.0 U	12.0 U

R-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

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/14/03 09:12

RFW Batch Number: 0306L672

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

	Cust ID:	B161C4	B161C4	B161C4	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	03LE0751-MB1	03LE0751-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	77 %	73 %	72 %	73 %	64 %
	-----fl-----fl-----fl-----fl-----fl-----fl-----fl					
Diesel Range Organics		12.4 U	84 %	74 %	12.0 U	71 %
Kerosene		12.4 U	12.4 U	12.4 U	12.0 U	12.0 U

7/27/03

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					F03-006-137		Page 1 of 1					
Collector Johansen/Pope/Pfister/Hughes		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days				
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-B-12 (C3246); (247.5-250')			SAF No. F03-006		Air Quality <input type="checkbox"/>							
Ice Chest No. ERC 02-405		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express								
Shipped To EDERLINE SERVICES (Formerly TMA) <i>Merca</i>		Offsite Property No. <i>A030 287</i>			Bill of Lading/Air Bill No. <i>SEE OSR</i>									
POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: <i>B171P6</i> <i>gpc 6-13-03</i> Tie to <i>B171P5</i> Radioactive Special Handling and/or Storage <i>cool 40c</i>				Preservation	Cool 4C	Cool 4C	None	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	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.	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											
B161C3	SOIL	6-13-03	0900	X	X	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 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 radl characteristics. (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-166); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium, Americium-241; Isotopic Plutonium, Isotopic Uranium (Carbon-14, Radium-226, Radium-228, Radium-226, Radium-228) (6) Total Pb, Sr, Ba, Po - Totals; Isotopic Thorium (Thorium-232)				S=Soil SE=Soilment SO=Solid SI=Sludge W=Water O=Oil A=Air DS=Drawn Solids DL=Drawn Liquids T=Tissue WT=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								
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 Hanford

Purchase Order/Project:

DATE: 6.14.03

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

Laboratory SDG#:

0306L636

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-02-405 / 0.3°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:



0306L672

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	A	B	C	D	E
Est. Final Proj. Sampling Date	#/Type Container	Liquid	Liquid	Liquid	Liquid	Liquid
Project # <u>11343-606-001-9999-00</u>	Solid	Solid	Solid	Solid	Solid	Solid
Project Contact/Phone #	Volume	Liquid	Liquid	Liquid	Liquid	Liquid
Lionville Laboratory Project Manager <u>OJ</u>	Solid	Solid	Solid	Solid	Solid	Solid
QC <u>Spec</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives					

Date Rec'd 6/20/03 Date Due 7-20-03

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	Metal	CN
			<u>alk. ket. Glyc.</u>	<u>IC. Arsenic CN</u>	<u>Oil/grease Cr6</u>

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				0625X	0700	0680	0655	0805	INORG	MET	INORG	IC	
	001	BIBICH	X	X	S	6/18/03	1305	1			1		1	1	1		

Special Instructions: SAF ± F03-006

DATE/REVISIONS:
6/20/03 1. Matrix QC not required; SDG w/0306L636
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

MET ⊙: RCRA + Sb, Be, Bi, B, Cu, Ni

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

SDG w/0306L636

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 Times 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. 1.4 °C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FeedEX	J Perry	6/20/03	0940	COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 7903 2388 7077

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford
Purchase Order/Project:

DATE: 6-20-03

AF# SOW# / Release #: F03-006

Laboratory SDG #:

03064672

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:

Cell 02-001 / 1.4°C

Laboratory Sample Custodian:

J. Smith

Laboratory Project Manager:

Lionville Laboratory, Inc.
 GCSC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3	001	S	03LE0764	06/13/03	06/25/03	07/07/03
B161C3	001 MS	S	03LE0764	06/13/03	06/25/03	07/07/03
B161C3	001 MSD	S	03LE0764	06/13/03	06/25/03	07/07/03

LAB QC:

BLK	MB1	S	03LE0764	N/A	06/25/03	07/07/03
BLK	MB1 BS	S	03LE0764	N/A	06/25/03	07/07/03



Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4	001	S	03LE0764	06/18/03	06/25/03	07/07/03
LAB QC:						
BLK	MB1	S	03LE0764	N/A	06/25/03	07/07/03
BLK	MB1 BS	S	03LE0764	N/A	06/25/03	07/07/03

7/6/03/14/03



Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0306L636;0306L672
SDG/SAF#: H2268/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 06-14,20-03

GC SCAN

The set of samples consisted of two (2) soil samples collected on 06-13,18-03.

The sample and its associated QC samples were extracted on 06-25-03 and analyzed on 07-07-03 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 mLs) 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 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. 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 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.


Ian Daniels
Laboratory Manager
Lionville Laboratory Incorporated
r:\group\data\gcsc\06L-636672..doc

7/15/03
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 14 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0360245

Initiator: John Luch
 Date: 7/11/07
 Client: TAW - Hunter?

Batch: 0306025, 636, 672
 Samples: all matrix QC
 Method: SW846/MCAVVV/CLPI

Parameter: OGCSC
 Matrix: SO-1
 Prep Batch: 03LE0764

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)

matrix QC decreased for Etyl etc.
 625-0015 30%
 001T 26%
 636 0015 32%
 001T 33%

2. Known or Probable Causes(s)

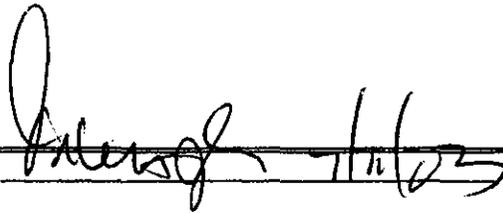
matrix effects.

3. Discussion and Proposed Action

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

Other Description:

Matrix. Blank spike in control.
 No hits in samples 7 1/2 reposition limit



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:

John Luch

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
 Initiator
 Lab General Manager: M. Taylor
 Project Mgr: Stone/Johnson/Haslett
 Technical Mgr: Wesson/Daniels
 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 GC SCAN DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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



GLOSSARY OF GC SCAN DATA

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

Lionville Laboratory, Inc.

GC SCAN

Report Date: 07/11/03 08:24

RFW Batch Number: 0306L636

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

7

Sample Information	Cust ID:	B161C3	B161C3	B161C3	BLK	BLK BS
	RFW#:	001	001 MS	001 MSD	03LE0764-MB1	03LE0764-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Methanol		22 U	94 %	105 %	25 U	102 %
Ethyl Ether		22 U	32 * %	33 * %	25 U	50 %
1-Butanol		22 U	91 %	95 %	25 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

Lionville Laboratory, Inc.

GC SCAN

Report Date: 07/14/03 09:58

RFW Batch Number: 0306L672

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

00

	Cust ID:	B161C4	BLK	BLK BS
Sample	RFW#:	001	03LE0764-MB1	03LE0764-MB1
Information	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg

	fl	fl	fl	fl	fl
Methanol	26 U	25 U	102 %		
Ethyl Ether	26 U	25 U	50 %		
1-Butanol	26 U	25 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

For notes

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford
Purchase Order/Project:

DATE: 6.14.03

AF# SOW# / Release #: F03-006

Laboratory SDG #: 0306L636

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-02-405 / 0.3°C

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



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	A	B	C	D	E
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid	Liquid	Liquid	Liquid	Liquid
Project # <u>11343-606-001-9999-00</u>		Solid	Solid	Solid	Solid	Solid
Project Contact/Phone # _____	Volume	Liquid	Liquid	Liquid	Liquid	Liquid
Lionville Laboratory Project Manager <u>QJ</u>		Solid	Solid	Solid	Solid	Solid
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives					

Date Rec'd <u>6/20/03</u>	Date Due <u>7-20-03</u>	ANALYSES REQUESTED	ORGANIC	INORG							
		VOA	BNA	Pest/PCB	Herb	alk. ket. Glyc.	IC	Metal	Oil	Oil	Oil

MATRIX CODES: S - Soil SE - Sediment SO - Soil 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				0625X	0700	0760	065C	0805	INORG	MET	INORG	IC	IC				
	001	BIGCH	X	X	S	6/18/03	1305	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Special Instructions: SAF ± F03-006

DATE/REVISIONS:
6/20/03 1. Matrix QC not required; SDG w/1306L636

MET ⊙ = RCRA + Sb, Be, Bi, B, Cu, Ni

INORG ⊙ = IC = Cl, F, NO₃, NO₂, PO₄, SO₄
INH3N, ZPH, ICNTO

SDG w/0306L636

Lionville Laboratory Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____ 2) Ambient or <input checked="" type="checkbox"/> Chilled 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	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'd <input checked="" type="checkbox"/> or N Cooler Temp. <u>1.4</u> °C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FedEx	J Perry	6/20/03	0940	COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
7903 2388 7077

Collector <i>187 RP</i> 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 <i>6-18-3 RP</i> 216-B-12 (C3246); (2945-297)	<i>302-304.5'</i>	SAF No. F03-006	Air Quality <input type="checkbox"/>	
Ice Chest No. <i>ERC 02-001</i>	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express		
Shipped To <i>ms 6-9-03</i> EDERLINE SERVICES (Formerly TMA) <i>Heera</i>	Offsite Property No. <i>A030289</i>	Bill of Lading/Air Bill No. <i>SEK 05PC</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: <i>B171P7 B171P5 RC 6-19-03</i> Special Handling and/or Storage <i>COOL 4C</i>	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	1	1	1	1	1
	Volume	60mL	125mL	60mL	125mL	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							
B161C4	SOIL	6-18-3	1305	X	X	X	X	X		

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS <i>6-18-3 RP</i>				Matrix *
Relinquished By/Removed From <i>R. PFISTER</i>	Date/Time <i>6-18-3 1444</i>	Received By/Stored In <i>MO-026 FRIG #1</i>	Date/Time <i>6-18-3 1444</i>	The lab is to achieve a detection limit of 50.0 pCi/g for G-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 bad characteristics. (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-151, Europium-154, Europium-155); Gamma Spec - Add-on (Caesium-134, Radium-226, Radium-228, Th-232, Total Uranium, Americium-241, Isotopic Phosphorus, Isotopic Uranium) (C-14, I-129, N-13, Neptunium-237, Pu-239, Pu-240, Pu-242, Total Pu, Thorium-230, Thorium-232) (6) Total Pu, Sr-90, Y-90, Total Sr, Isotopic Thorium (Th-230, Th-232)				S=Soil SE=Soil/soil SO=Solid SL=Sediment W=Water O=Oil A=Air DS=Draw Solids DL=Draw Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>MO-026 FRIG #1</i>	Date/Time <i>6-19-03 0835</i>	Received By/Stored In <i>Mojaran/Karman</i>	Date/Time <i>6-19-03</i>					
Relinquished By/Removed From <i>Mojaran/Karman</i>	Date/Time <i>6-19-03 0850</i>	Received By/Stored In <i>FedEx</i>	Date/Time <i>6-19-03 10-19-03</i>					
Relinquished By/Removed From <i>FedEx</i>	Date/Time <i>6/20/03</i>	Received By/Stored In <i>JERRY</i>	Date/Time <i>6/20/03 0940</i>					
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 Hamford
Purchase Order/Project:

DATE: 6.20.03

AF# SOW# / Release #: F03-006

Laboratory SDG #:

03064672

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 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:

See 02-001 / 1.4°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

14

Lionville Laboratory, Inc.
 8015 ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3	001	S	03LE0763	06/13/03	06/25/03	06/25/03
B161C3	001 MS	S	03LE0763	06/13/03	06/25/03	06/25/03
B161C3	001 MSD	S	03LE0763	06/13/03	06/25/03	06/25/03

LAB QC:

BLK	MB1	S	03LE0763	N/A	06/25/03	06/25/03
BLK	MB1 BS	S	03LE0763	N/A	06/25/03	06/25/03

File 7/11/03





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0306L636
SDG/SAF#: H2268/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 06-14-03

GC SCAN-Ethylene Glycol

One (1) soil sample was collected on 06-13-03.

The sample and its associated QC samples were prepped and analyzed on 06-25-03 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 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. 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

7/15/03
Date

r:\group\data\gcsc\06L-636a.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 8 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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



GLOSSARY OF GC SCAN DATA

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

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015

Report Date: 07/11/03 07:32

RFW Batch Number: 0306L636

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

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	Cust ID:	B161C3	B161C3	B161C3	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	03LE0763-MB1	03LE0763-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
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Ethylene Glycol		25.5 U	100 %	96 %	25.0 U	83 %

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



03062636

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU Hanford F03-006</u>	Refrigerator #	A	B	C	D	E	F
Est. Final Proj. Sampling Date	#/Type Container	Liquid					
Project # <u>11343-606-001-9999-00</u>		Solid					
Project Contact/Phone #	Volume	Liquid					
Lionville Laboratory Project Manager <u>Deletta Johnson</u>		Solid					
QC <u>SPEC.</u> Del <u>Std.</u> TAT <u>30 days</u>	Preservatives						
Date Rec'd <u>6-14-03</u> Date Due <u>7/14/03</u>	ANALYSES REQUESTED	ORGANIC			INORG		
		VOA	BNA (2)	Pes/PCB	Herb	Alcohols Glycols (1)	Metal (3) CN
							IC (4) Arsenic
							NO ₂ /NO ₃ OHG
							Hex Chrome

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				0025X	0180, 0680	0605C	met. ①	Inorg ①	IN3NA	IC68R	ICRG		
	001	B161C3	X	X	S	6-13-03	0900	X		X		X		X	X	X	

Special Instructions: <u>Saf # F03-006</u>	DATE/REVISIONS: <u>met ① 1. RCRA + Sb, Be, Bi, B, Cu, Ni</u> <u>Inorg ① 2. IC = Cl, F, NO₂, NO₃, PO₄, SO₄, ENH3N, IPH, ICNTD</u>	Lionville Laboratory Use Only
		Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered <input type="checkbox"/> Airbill # <u> </u>
		2) Ambient or <input checked="" type="checkbox"/> Chilled
		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
		Tamper Resistant Seal wa 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>03</u> °C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Deletta Johnson</u>	<u>W. Johnson</u>	<u>6-14-03</u>	<u>10:05</u>	ORIGINAL	DATE		
				REWRITTEN	W. Johnson		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 7929 0867 4975

Collector: Johansen/Pope/Pfister/Hughes
 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); (247.5-250')
 SAF No.: F03-006
 Price Code: 8N Data Turnaround: 45 Days
 Air Quality:

Ice Chest No.: **ERC 02-405**
 Field Logbook No.: HNF-N-3361 COA: 117504ES10
 Method of Shipment: Federal Express

Shipped To: **MDL 6-9-03 EBERLINE SERVICES (Formerly TMA) Arcata**
 Offsite Property No.: **A030287**
 Bill of Lading/Air Bill No.: **SEE OSR**

POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: B171P5 <i>6-13-03</i> Tie to B171P5 Radioactive Special Handling and/or Storage COOL 40C	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	1	1	1	1	1
	Volume	60mL	125mL	60mL	125mL	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							
B161C3	SOIL	6-13-03	0900	X	X	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 lab is to achieve a detection limit of 50.0 ppb for G+M. 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) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec. Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (U-235, U-238); Iodine-129; Nickel-63; Neptunium-237 (6) Tech 99, Sr-89, 90 - Total Sr; Isotopic Thorium (Thorium-232)		S=Soil SE=Settlement 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
S.S. POPE	6-13-03 1120	Greg Thomas	6/13/03 1120			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Greg Thomas	6/13/03 1125	ERC	6/13/03 1125			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
K. E. Cole	6-13-03 1125	Fed Ex				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Debra	6-13-03 10:05	D. [Signature]	6-13-03 10:05			
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 Hanford
Purchase Order/Project:

DATE: 6.14.03

SAF# SOW# / Release #: F03-006

Laboratory SDG #: 03064636

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-02-405 / 0.3°C

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

Lionville Laboratory, Inc.
8015 ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4	001	S	03LE0763	06/18/03	06/25/03	06/25/03

LAB QC:

BLK	MB1	S	03LE0763	N/A	06/25/03	06/25/03
BLK	MB1 BS	S	03LE0763	N/A	06/25/03	06/25/03



For 1/1/03



Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0306L672
SDG/SAF#: H2268/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 06-20-03

GC SCAN-Ethylene Glycol

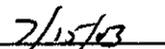
One (1) soil sample was collected on 06-20-03.

The sample and its associated QC samples were prepped and analyzed on 06-25-03 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 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. The blank spike recovery was within acceptance criteria.
6. Matrix spike analyses are associated with Lionville batch# 0306L636.
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


Date

r:\group\data\gsc\06L-672a.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 8 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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



GLOSSARY OF GC SCAN DATA

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

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015

Report Date: 07/14/03 10:31

RFW Batch Number: 0306L672

Client: TNUHANFORD F03-006 H2268 Work Order: 11343606001 Page: 1

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	Cust ID:	B161C4	BLK	BLK BS
Sample	RFW#:	001	03LE0763-MB1	03LE0763-MB1
Information	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====				
Ethylene Glycol		22.0 U	25.0 U	83 %

For 7/14/03

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					F03-006-138		Page 1 of 1				
Collector ⁶⁻¹⁸⁻⁰³ 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 ^{6-18-3 RP} 216-B-12 (C3246); (294.5', 297') 302-304.5'		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days					
Ice Chest No. ERC 02-001		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express							
Shipped To ^{MS 6-9-03} EDERLINE SERVICES (Formerly TMA) <i>Necca</i>		Offsite Property No. A030289		Bill of Lading/Air Bill No. SEF 03PE									
POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: ^{B121P7} B171P5 RC 6-18-03 Special Handling and/or Storage Cool 4c				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	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.	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.	Triium - H3		
				Sample No.	Matrix *	Sample Date	Sample Time						
B161C4	SOIL	6-18-3	1305	X	X	X	X	X					
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From R. PFISTER <i>[Signature]</i>		Date/Time 6-18-3 1444		Received By/Stored In MO-026 FRIG #1 <i>[Signature]</i>		Date/Time 6-18-3 1444		<p>The lab is to achieve a detection limit of 500 ppb 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 radi characteristics.</p> <p>(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, C-14, F-129, N-13, Neptunium-237, Technetium-99, Sr-89, Sr-90, Total Sr, Isotopic Thorium, Thorium-232);</p>				S=Soil SE=Settleout 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	
Relinquished By/Removed From MO-026 FRIG #1 <i>[Signature]</i>		Date/Time 6-19-03 0835		Received By/Stored In Immarisen <i>[Signature]</i>		Date/Time 6-19-03							
Relinquished By/Removed From Immarisen <i>[Signature]</i>		Date/Time 6-19-03 0850		Received By/Stored In FedEx <i>[Signature]</i>		Date/Time 6-19-03 0850							
Relinquished By/Removed From FedEx <i>[Signature]</i>		Date/Time 6/20/03 0940		Received By/Stored In JKerry <i>[Signature]</i>		Date/Time 6/20/03 0940							
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 Hamford
Purchase Order/Project:

DATE: 6.20.03

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

Laboratory SDG #:

03064672

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:

Cell 02-001 / 1.4°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268



DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3						
SILVER, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
SILVER, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
SILVER, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
ARSENIC, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
ARSENIC, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
ARSENIC, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
BORON, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
BORON, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
BORON, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
BARIUM, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
BARIUM, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
BARIUM, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
BERYLLIUM, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
BERYLLIUM, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
BERYLLIUM, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
BISMUTH, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
BISMUTH, TOTAL REP	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
BISMUTH, TOTAL SPIKE	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
CADMIUM, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
CADMIUM, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
CADMIUM, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
CHROMIUM, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
CHROMIUM, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
CHROMIUM, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
COPPER, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
COPPER, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
COPPER, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
MERCURY, TOTAL	001	S	03C0150	06/13/03	06/19/03	06/20/03
MERCURY, TOTAL	001 REP	S	03C0150	06/13/03	06/19/03	06/20/03
MERCURY, TOTAL	001 MS	S	03C0150	06/13/03	06/19/03	06/20/03
NICKEL, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
NICKEL, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
NICKEL, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
LEAD, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
LEAD, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
ANTIMONY, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
ANTIMONY, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
ANTIMONY, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03
SELENIUM, TOTAL	001	S	03L0359	06/13/03	06/27/03	07/03/03
SELENIUM, TOTAL	001 REP	S	03L0359	06/13/03	06/27/03	07/03/03
SELENIUM, TOTAL	001 MS	S	03L0359	06/13/03	06/27/03	07/03/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
SILVER, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
ARSENIC LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
ARSENIC, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
BORON LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BORON, TOTAL	MB1	S	03L0359	N/A		07/01/03
BARIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BARIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BERYLLIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
BISMUTH, LCS	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BISMUTH, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
CADMIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
CADMIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
CHROMIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
CHROMIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
COPPER LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
COPPER, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
MERCURY LABORATORY	LC1 BS	S	03C0150	N/A	06/19/03	06/20/03
MERCURY, TOTAL	MB1	S	03C0150	N/A	06/19/03	06/20/03
NICKEL LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
NICKEL, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
LEAD LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
LEAD, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
ANTIMONY LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
ANTIMONY, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
SELENIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
SELENIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4						
SILVER, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
SILVER, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
SILVER, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
ARSENIC, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
ARSENIC, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
ARSENIC, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
BORON, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
BORON, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
BORON, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
BARIUM, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
BARIUM, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
BARIUM, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
BERYLLIUM, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
BERYLLIUM, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
BERYLLIUM, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
BISMUTH, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
BISMUTH, TOTAL REP	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
BISMUTH, TOTAL SPIKE	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
CADMIUM, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
CADMIUM, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
CADMIUM, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
CHROMIUM, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
CHROMIUM, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
CHROMIUM, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
COPPER, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
COPPER, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
COPPER, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
MERCURY, TOTAL	001	S	03C0160	06/18/03	07/08/03	07/09/03
NICKEL, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
NICKEL, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
NICKEL, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
LEAD, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
LEAD, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
LEAD, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
ANTIMONY, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
ANTIMONY, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03
SELENIUM, TOTAL	001	S	03L0359	06/18/03	06/27/03	07/03/03
SELENIUM, TOTAL	001 REP	S	03L0359	06/18/03	06/27/03	07/03/03
SELENIUM, TOTAL	001 MS	S	03L0359	06/18/03	06/27/03	07/03/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
SILVER, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
ARSENIC LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
ARSENIC, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
BORON LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BORON, TOTAL	MB1	S	03L0359	N/A		07/01/03
BARIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BARIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BERYLLIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
BISMUTH, LCS	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
BISMUTH, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
CADMIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
CADMIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
CHROMIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
CHROMIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
COPPER LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
COPPER, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
MERCURY LABORATORY	LC1 BS	S	03C0160	N/A	07/08/03	07/09/03
MERCURY, TOTAL	MB1	S	03C0160	N/A	07/08/03	07/09/03
NICKEL LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
NICKEL, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
LEAD LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
LEAD, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
ANTIMONY LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
ANTIMONY, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03
SELENIUM LABORATORY	LC1 BS	S	03L0359	N/A	06/27/03	07/01/03
SELENIUM, TOTAL	MB1	S	03L0359	N/A	06/27/03	07/01/03



Analytical Report

Client: TNU-HANFORD F03-006
LVL#: 0306L636/0306L672
SDG/SAF#: H2268/F03-006

W.O.#: 11343-606-001-9999-00
Dates Received: 06-14/06-20-03

METALS CASE NARRATIVE

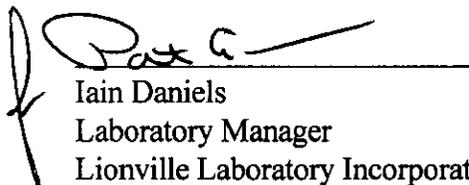
1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's 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. The preparation/method blank for 1 analyte was outside 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.
 - a). The MB result for Beryllium was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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 **22** pages.

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:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u>	
		<u>Concentration (ppb)</u>	<u>% Recovery</u>
B161C3	Antimony	100	104.2
B161C4	Chromium	100	114.1
	Antimony	100	107.2

12. The duplicate analyses for 9 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/m06-636/672

07-11-03
 Date

METALS METHOD GLOSSARY

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

Lot#: 0306L636/0306L672

Leaching Procedure: 1310 1311 1312 Other: _____

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

Metals Digestion Methods: 3005A 3010A 3015 3020A X3050B 3051 200.7 SS17
 Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Antimony	<u>X6010B 7041⁵</u>	<u> 200.7 204.2</u>			<u> 99</u>
Arsenic	<u>X6010B 7060A⁵</u>	<u> 200.7 206.2</u>	<u> 3113B</u>		<u> 99</u>
Barium	<u>X6010B</u>	<u> 200.7</u>			<u> 99</u>
Beryllium	<u>X6010B</u>	<u> 200.7</u>			<u> 99</u>
Bismuth	<u>X6010B¹</u>	<u> 200.7¹</u>		<u> 1620</u>	<u> 99</u>
Boron	<u>X6010B</u>	<u> 200.7</u>			<u> 99</u>
Cadmium	<u>X6010B 7131A⁵</u>	<u> 200.7 213.2</u>			<u> 99</u>
Calcium	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Chromium	<u>X6010B 7191⁵</u>	<u> 200.7 218.2</u>			<u> SS17</u>
Cobalt	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Copper	<u>X6010B 7211⁵</u>	<u> 200.7 220.2</u>			<u> 99</u>
Iron	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Lead	<u>X6010B 7421⁵</u>	<u> 200.7 239.2</u>	<u> 3113B</u>		<u> 99</u>
Lithium	<u> 6010B 7430⁴</u>	<u> 200.7</u>		<u> 1620</u>	<u> 99</u>
Magnesium	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Manganese	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Mercury	<u> 7470A³ X7471A³</u>	<u> 245.1² 245.5²</u>			<u> 99</u>
Molybdenum	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Nickel	<u>X6010B</u>	<u> 200.7</u>			<u> 99</u>
Potassium	<u> 6010B 7610⁴</u>	<u> 200.7 258.1⁴</u>			<u> 99</u>
Rare Earths	<u> 6010B¹</u>	<u> 200.7¹</u>		<u> 1620</u>	<u> 99</u>
Selenium	<u>X6010B 7740⁵</u>	<u> 200.7 270.2</u>	<u> 3113B</u>		<u> 99</u>
Silicon	<u> 6010B¹</u>	<u> 200.7</u>		<u> 1620</u>	<u> 99</u>
Silica	<u> 6010B</u>	<u> 200.7</u>		<u> 1620</u>	<u> 99</u>
Silver	<u>X6010B 7761⁵</u>	<u> 200.7 272.2</u>			<u> 99</u>
Sodium	<u> 6010B 7770⁴</u>	<u> 200.7 273.1⁴</u>			<u> 99</u>
Strontium	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Thallium	<u> 6010B 7841⁵</u>	<u> 200.7 279.2 200.9</u>			<u> 99</u>
Tin	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Titanium	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Uranium	<u> 6010B¹</u>	<u> 200.7¹</u>		<u> 1620</u>	<u> 99</u>
Vanadium	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Zinc	<u> 6010B</u>	<u> 200.7</u>			<u> 99</u>
Zirconium	<u> 6010B¹</u>	<u> 200.7¹</u>		<u> 1620</u>	<u> 99</u>

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 07/10/03

CLIENT: TNUHANFORD F03-006 H2268

LVL LOT #: 0306L636

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	8161C3	Silver, Total	0.1	u MG/KG	0.1	1.0
		Arsenic, Total	2.1	MG/KG	0.27	1.0
		Boron, Total	0.80	MG/KG	0.15	1.0
		Barium, Total	63.6	MG/KG	0.02	1.0
		Beryllium, Total	0.22	MG/KG	0.008	1.0
		Bismuth, Total	0.41	u MG/KG	0.41	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	10.8	MG/KG	0.08	1.0
		Copper, Total	11.6	MG/KG	0.05	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Nickel, Total	10.1	MG/KG	0.11	1.0
		Lead, Total	2.7	MG/KG	0.19	1.0
		Antimony, Total	0.26	MG/KG	0.18	1.0
		Selenium, Total	0.34	u MG/KG	0.34	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/10/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B161C4	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	2.0	MG/KG	0.22	1.0
		Boron, Total	0.75	MG/KG	0.13	1.0
		Barium, Total	93.8	MG/KG	0.01	1.0
		Beryllium, Total	0.18	MG/KG	0.007	1.0
		Bismuth, Total	0.34	u MG/KG	0.34	1.0
		Cadmium, Total	0.03	u MG/KG	0.03	1.0
		Chromium, Total	30.4	MG/KG	0.07	1.0
		Copper, Total	16.6	MG/KG	0.04	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Nickel, Total	10.9	MG/KG	0.09	1.0
		Lead, Total	4.7	MG/KG	0.15	1.0
		Antimony, Total	0.65	MG/KG	0.15	1.0
		Selenium, Total	0.28	u MG/KG	0.28	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/10/03

CLIENT: TNUHANFORD P03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636 / 0306L672

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0359-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	0.26	MG/KG	0.19	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.03	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	0.23 u	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	03C0150-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/10/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B161C3	Silver, Total	4.6	0.1 u	4.8	95.8	1.0
		Arsenic, Total	182	2.1	191	94.6	1.0
		Boron, Total	91.0	0.80	95.3	94.7	1.0
		Barium, Total	253	63.6	191	99.5	1.0
		Beryllium, Total	4.9	0.22	4.8	97.5	1.0
		Bismuth, Total	466	0.41u	476	97.8	1.0
		Cadmium, Total	4.6	0.05	4.8	94.7	1.0
		Chromium, Total	29.6	10.8	19.1	98.4	1.0
		Copper, Total	36.8	11.6	23.8	105.9	1.0
		Mercury, Total	0.13	0.02u	0.15	86.8	1.0
		Nickel, Total	57.3	10.1	47.7	99.0	1.0
		Lead, Total	49.4	2.7	47.7	97.9	1.0
		Antimony, Total	26.0	0.26	47.7	54.0	1.0
		Selenium, Total	175	0.34u	191	91.8	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/10/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B161C4	Silver, Total	3.5	0.08u	3.8	92.1	1.0
		Arsenic, Total	143	2.0	151	93.1	1.0
		Boron, Total	70.9	0.75	75.7	92.7	1.0
		Barium, Total	236	93.8	151	94.0	1.0
		Beryllium, Total	3.9	0.18	3.8	97.9	1.0
		Bismuth, Total	360	0.34u	378	95.2	1.0
		Cadmium, Total	3.6	0.03u	3.8	94.7	1.0
		Chromium, Total	58.8	30.4	15.1	188.1	1.0
		Copper, Total	38.2	16.6	18.9	114.3	1.0
		Nickel, Total	48.9	10.9	37.8	100.5	1.0
		Lead, Total	41.2	4.7	37.8	96.6	1.0
		Antimony, Total	21.8	0.65	37.8	56.0	1.0
		Selenium, Total	136	0.28u	151	90.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/10/03

CLIENT: TNUHANFORD P03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE		DILUTION
			RESULT	RPD	RPD	FACTOR (REP)
-001REP	B161C3	Silver, Total	0.1 u	0.11u	NC	1.0
		Arsenic, Total	2.1	3.1	38.5	1.0
		Boron, Total	0.80	0.68	16.4	1.0
		Barium, Total	63.6	61.5	3.4	1.0
		Beryllium, Total	0.22	0.12	55.0	1.0
		Bismuth, Total	0.41u	0.46u	NC	1.0
		Cadmium, Total	0.05	0.04	25.3	1.0
		Chromium, Total	10.8	10.6	1.9	1.0
		Copper, Total	11.6	12.6	8.3	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	10.1	9.3	8.2	1.0
		Lead, Total	2.7	2.9	7.1	1.0
		Antimony, Total	0.26	0.23	10.7	1.0
		Selenium, Total	0.34u	0.38u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/10/03

CLIENT: TNUHANFORD F03-006 H2268

LVL LOT #: 0306L672

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	B161C4	Silver, Total	0.08u	0.1 u	NC	1.0
		Arsenic, Total	2.0	1.6	22.2	1.0
		Boron, Total	0.75	1.0	28.6	1.0
		Barium, Total	93.8	168	56.8	1.0
		Beryllium, Total	0.18	0.30	48.8	1.0
		Bismuth, Total	0.34u	0.40u	NC	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	30.4	22.5	29.9	1.0
		Copper, Total	16.6	17.7	6.4	1.0
		Nickel, Total	10.9	11.5	5.4	1.0
		Lead, Total	4.7	5.4	13.9	1.0
		Antimony, Total	0.65	0.51	24.9	1.0
		Selenium, Total	0.28u	0.33u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/10/03

CLIENT: TNUHANFORD P03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636 / 0306L672

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	03L0359-LC1	Silver, LCS	48.2	50.0	MG/KG	96.4
		Arsenic, LCS	931	1000	MG/KG	93.1
		Boron, LCS	475	500	MG/KG	94.9
		Barium, LCS	513	500	MG/KG	102.6
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Bismuth, LCS	492	500	MG/KG	98.5
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	49.9	50.0	MG/KG	99.8
		Copper, LCS	126	125	MG/KG	100.9
		Nickel, LCS	204	200	MG/KG	102.2
		Lead, LCS	246	250	MG/KG	98.3
		Antimony, LCS	289	300	MG/KG	96.2
		Selenium, LCS	863	1000	MG/KG	86.3
LCS1	03C0150-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.8

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F03-006-137	Page 1 of 1
Collector Johansen/Pope/Pfister/Hughes	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ		Price Code 8N	Data Turnaround 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location 216-B-12 (C3246); (247.5-250')	SAF No. F03-006		Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02-409	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express			
Shipped To EDERLINE SERVICES (Formerly TMA) <i>Trera</i>	Offsite Property No. A030 287	Bill of Lading/Air Bill No. SEE OSR				

POSSIBLE SAMPLE HAZARDS/REMARKS <i>RADIOACTIVE TIE TO B171P6 9/2 6.13.03</i> <i>Tie TO B171P5 Radioactive</i> <i>Special Handling and/or Storage</i> <i>COOL 40C</i>	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	1	1	1	1	1
	Volume	60mL	125mL	60mL	125mL	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								
B161C3	SOIL	6.13.03	0900	X	X	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>J.S. Pope</i>	Date/Time 6.13.03 1120	Received By/Stored In <i>Greg Thomas</i>	Date/Time 6/13/03 1120	SPECIAL INSTRUCTIONS <i>1st 6.12.03</i> The lab is to achieve a detection limit of 50.0 µg/g for G-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) 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 (Caesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Caesium-134, Radium-226, Radium-228, Th-230, Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Uranium) (Carbon-14, Iodine-129, Nickel-63, Neptunium-237) (6) Total Sr, Isotopic Thorium (Thorium-232)		S=Soil SE=Soil/mud SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Greg Thomas</i>	Date/Time 6/13/03 1125	Received By/Stored In <i>ERC</i>	Date/Time 6.13.03 1125			
Relinquished By/Removed From <i>R. Fall</i>	Date/Time 6.13.03 1125	Received By/Stored In <i>Fed Ex</i>	Date/Time 6.13.03 1125			
Relinquished By/Removed From <i>Dea E</i>	Date/Time 6.14.03/10:05	Received By/Stored In <i>D. J. Smith</i>	Date/Time 6.14.03/10:05			
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

Collector <i>183 RF</i> 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 <i>6-18-3 RF</i> 216-B-12 (C3246); (294.S.297) <i>302-304.5'</i>	SAF No. F03-006	Method of Shipment Federal Express	Air Quality <input type="checkbox"/>	
Ice Chest No. <i>ERC 02-001</i>	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express		
Shipped To <i>MS 6-9-03</i> EDERLINE SERVICES (Formerly TMA) <i>Necca</i>	Offsite Property No. <i>0030289</i>	Bill of Lading/Air Bill No. <i>SEK 03PC</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO: <i>B111P7 B171P5 RC 6-19-03</i> Special Handling and/or Storage <i>COOL 4c</i>	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	1	1	1	1	1
	Volume	60mL	125mL	60mL	125mL	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.	Tridium - H3
Sample No.	Matrix *	Sample Date	Sample Time								
B161C4	SOIL	6-18-3	1305	X	X	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS <i>6-18-3 RF</i>				Matrix *
Relinquished By/Removed From <i>R. PFISTER</i>	Date/Time <i>6-18-3 1444</i>	Received By/Stored In <i>MO-026 FR16 #1</i>	Date/Time <i>6-18-3 1444</i>	The lab is to achieve a detection limit of 50.0 ug/g for G-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 radl characteristics.				S=Soil SE=Soil/extract SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drawn Solids DL=Drawn Liquids T=Trace W1=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>MO-026 FR16 #1</i>	Date/Time <i>6-19-03 0835</i>	Received By/Stored In <i>Immerman</i>	Date/Time <i>6-19-03</i>	(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, Thor-230, Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Uranium) <i>6-18-3 RF</i> (6) ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV); Total Cyanide - 9010; Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Uranium				
Relinquished By/Removed From <i>Immerman</i>	Date/Time <i>6-19-03 0850</i>	Received By/Stored In <i>Fed Ex</i>	Date/Time <i>6-19-03 10-19-03</i>					
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time	Received By/Stored In <i>Jerry</i>	Date/Time <i>6/20/03 0940</i>					
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 Hanford
Purchase Order/Project:

DATE: 6-14-03

AF# SOW# / Release #: F03-006

Laboratory SDG #: 03064636

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-02-405 / 0.3°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hamford

Purchase Order/Project:

DATE: 6-20-03

AF# SOW# / Release #: F03-006

Laboratory SDG #:

03064672

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

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

Cooler # / temp (°C) and Comments:

Cell 02-001 / 1.4°C

Laboratory Sample Custodian:

J. Smith

Laboratory Project Manager:



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT #: 0306L636

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C3						
% SOLIDS	001	S	03L&S082	06/13/03	06/19/03	06/20/03
% SOLIDS	001 REP	S	03L&S082	06/13/03	06/19/03	06/20/03
CHLORIDE BY IC	001	S	03LICA39	06/13/03	06/19/03	06/19/03
CHLORIDE BY IC	001 REP	S	03LICA39	06/13/03	06/19/03	06/19/03
CHLORIDE BY IC	001 MS	S	03LICA39	06/13/03	06/19/03	06/19/03
FLUORIDE BY IC	001	S	03LICA39	06/13/03	06/19/03	06/19/03
FLUORIDE BY IC	001 REP	S	03LICA39	06/13/03	06/19/03	06/19/03
FLUORIDE BY IC	001 MS	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRITE BY IC	001	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRITE BY IC	001 REP	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRITE BY IC	001 MS	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRATE BY IC	001	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRATE BY IC	001 REP	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRATE BY IC	001 MS	S	03LICA39	06/13/03	06/19/03	06/19/03
TOTAL CYANIDE	001	S	03LC058	06/13/03	06/20/03	06/20/03
TOTAL CYANIDE	001 REP	S	03LC058	06/13/03	06/20/03	06/20/03
TOTAL CYANIDE	001 MS	S	03LC058	06/13/03	06/20/03	06/20/03
PHOSPHATE BY IC	001	S	03LICA39	06/13/03	06/19/03	06/19/03
PHOSPHATE BY IC	001 REP	S	03LICA39	06/13/03	06/19/03	06/19/03
PHOSPHATE BY IC	001 MS	S	03LICA39	06/13/03	06/19/03	06/19/03
CHROMIUM VI	001	S	03LVI052	06/13/03	06/27/03	06/27/03
CHROMIUM VI	001 REP	S	03LVI052	06/13/03	06/27/03	06/27/03
CHROMIUM VI	001 MS	S	03LVI052	06/13/03	06/27/03	06/27/03
CHROMIUM VI	001 MSD	S	03LVI052	06/13/03	06/27/03	06/27/03
SULFATE BY IC	001	S	03LICA39	06/13/03	06/19/03	06/19/03
SULFATE BY IC	001 REP	S	03LICA39	06/13/03	06/19/03	06/19/03
SULFATE BY IC	001 MS	S	03LICA39	06/13/03	06/19/03	06/19/03
NITRATE NITRITE	001	S	03LN3B31	06/13/03	06/24/03	06/24/03
NITRATE NITRITE	001 REP	S	03LN3B31	06/13/03	06/24/03	06/24/03
NITRATE NITRITE	001 MS	S	03LN3B31	06/13/03	06/24/03	06/24/03
AMMONIA	001	S	03LAMA16	06/13/03	06/30/03	06/30/03
AMMONIA	001 REP	S	03LAMA16	06/13/03	06/30/03	06/30/03
AMMONIA	001 MS	S	03LAMA16	06/13/03	06/30/03	06/30/03
OIL & GREASE BY GRAV	001	S	03LOG029	06/13/03	06/27/03	07/01/03
OIL AND GREASE BY GR	001 REP	S	03LOG029	06/13/03	06/27/03	07/01/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/14/03

LVL LOT # :0306L636

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
OIL AND GREASE BY GR	001 MS	S	03LOG029	06/13/03	06/27/03	07/01/03
PH	001	S	03LPH040	06/13/03	06/16/03	06/16/03
PH	001 REP	S	03LPH040	06/13/03	06/16/03	06/16/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
CHLORIDE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
FLUORIDE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
FLUORIDE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
NITRITE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
NITRITE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
NITRATE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
NITRATE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
TOTAL CYANIDE	LCS L	S	03LC058	N/A	06/20/03	06/20/03
TOTAL CYANIDE	LCS L	S	03LC058	N/A	06/20/03	06/20/03
TOTAL CYANIDE	MB1	S	03LC058	N/A	06/20/03	06/20/03
PHOSPHATE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
PHOSPHATE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
CHROMIUM VI	MB1	S	03LVI052	N/A	06/27/03	06/27/03
CHROMIUM VI	MB1 BS	S	03LVI052	N/A	06/27/03	06/27/03
CHROMIUM VI	MB1 BSD	S	03LVI052	N/A	06/27/03	06/27/03
SULFATE BY IC	MB1	S	03LICA39	N/A	06/19/03	06/19/03
SULFATE BY IC	MB1 BS	S	03LICA39	N/A	06/19/03	06/19/03
NITRATE NITRITE	MB1	S	03LN3B31	N/A	06/24/03	06/24/03
NITRATE NITRITE	MB1 BS	S	03LN3B31	N/A	06/24/03	06/24/03
AMMONIA	MB1	S	03LAMA16	N/A	06/30/03	06/30/03
AMMONIA	MB1 BS	S	03LAMA16	N/A	06/30/03	06/30/03
AMMONIA	MB1 BSD	S	03LAMA16	N/A	06/30/03	06/30/03
OIL & GREASE BY GRAV	MB1	S	03LOG029	N/A	06/27/03	07/01/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG029	N/A	06/27/03	07/01/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG029	N/A	06/27/03	07/01/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT #: 0306L672

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B161C4						
% SOLIDS	001	S	03L&S084	06/18/03	06/26/03	06/26/03
% SOLIDS	001 REP	S	03L&S084	06/18/03	06/26/03	06/26/03
CHLORIDE BY IC	001	S	03LICCC40	06/18/03	06/26/03	06/26/03
CHLORIDE BY IC	001 REP	S	03LICCC40	06/18/03	06/26/03	06/26/03
CHLORIDE BY IC	001 MS	S	03LICCC40	06/18/03	06/26/03	06/26/03
FLUORIDE BY IC	001	S	03LICCC40	06/18/03	06/26/03	06/26/03
FLUORIDE BY IC	001 REP	S	03LICCC40	06/18/03	06/26/03	06/26/03
FLUORIDE BY IC	001 MS	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRITE BY IC	001	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRITE BY IC	001 REP	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRITE BY IC	001 MS	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRATE BY IC	001	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRATE BY IC	001 REP	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRATE BY IC	001 MS	S	03LICCC40	06/18/03	06/26/03	06/26/03
TOTAL CYANIDE	001	S	03LC059	06/18/03	06/30/03	06/30/03
PHOSPHATE BY IC	001	S	03LICCC40	06/18/03	06/26/03	06/26/03
PHOSPHATE BY IC	001 REP	S	03LICCC40	06/18/03	06/26/03	06/26/03
PHOSPHATE BY IC	001 MS	S	03LICCC40	06/18/03	06/26/03	06/26/03
CHROMIUM VI	001	S	03LVI052	06/18/03	06/27/03	06/27/03
SULFATE BY IC	001	S	03LICCC40	06/18/03	06/26/03	06/26/03
SULFATE BY IC	001 REP	S	03LICCC40	06/18/03	06/26/03	06/26/03
SULFATE BY IC	001 MS	S	03LICCC40	06/18/03	06/26/03	06/26/03
NITRATE NITRITE	001	S	03LN3B32	06/18/03	06/26/03	06/26/03
NITRATE NITRITE	001 REP	S	03LN3B32	06/18/03	06/26/03	06/26/03
NITRATE NITRITE	001 MS	S	03LN3B32	06/18/03	06/26/03	06/26/03
AMMONIA	001	S	03LAMA16	06/18/03	06/30/03	06/30/03
OIL & GREASE BY GRAV	001	S	03LOG029	06/18/03	06/27/03	07/01/03
PH	001	S	03LPH042	06/18/03	06/24/03	06/24/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LICCC40	N/A	06/26/03	06/26/03
CHLORIDE BY IC	MB1 BS	S	03LICCC40	N/A	06/26/03	06/26/03
FLUORIDE BY IC	MB1	S	03LICCC40	N/A	06/26/03	06/26/03
FLUORIDE BY IC	MB1 BS	S	03LICCC40	N/A	06/26/03	06/26/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2268

DATE RECEIVED: 06/20/03

LVL LOT # :0306L672

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1	S	03LICC40	N/A	06/26/03	06/26/03
NITRITE BY IC	MB1 BS	S	03LICC40	N/A	06/26/03	06/26/03
NITRATE BY IC	MB1	S	03LICC40	N/A	06/26/03	06/26/03
NITRATE BY IC	MB1 BS	S	03LICC40	N/A	06/26/03	06/26/03
TOTAL CYANIDE	LCS L	S	03LC059	N/A	06/30/03	06/30/03
TOTAL CYANIDE	LCS L	S	03LC059	N/A	06/30/03	06/30/03
TOTAL CYANIDE	MB1	S	03LC059	N/A	06/30/03	06/30/03
PHOSPHATE BY IC	MB1	S	03LICC40	N/A	06/26/03	06/26/03
PHOSPHATE BY IC	MB1 BS	S	03LICC40	N/A	06/26/03	06/26/03
CHROMIUM VI	MB1	S	03LVI052	N/A	06/27/03	06/27/03
CHROMIUM VI	MB1 BS	S	03LVI052	N/A	06/27/03	06/27/03
CHROMIUM VI	MB1 BSD	S	03LVI052	N/A	06/27/03	06/27/03
SULFATE BY IC	MB1	S	03LICC40	N/A	06/26/03	06/26/03
SULFATE BY IC	MB1 BS	S	03LICC40	N/A	06/26/03	06/26/03
AMMONIA	MB1	S	03LAMA16	N/A	06/30/03	06/30/03
AMMONIA	MB1 BS	S	03LAMA16	N/A	06/30/03	06/30/03
AMMONIA	MB1 BSD	S	03LAMA16	N/A	06/30/03	06/30/03
OIL & GREASE BY GRAV	MB1	S	03LOG029	N/A	06/27/03	07/01/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG029	N/A	06/27/03	07/01/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG029	N/A	06/27/03	07/01/03



Analytical Report

Client: TNU-HANFORD F03-006 H2268
LVL#: 0306L636; 672

W.O.#: 11343-606-001-9999-00
Date Received: 06-14,20-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
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 with the exception of 03LOG029-MB1 for Oil and Grease that were below the 80-120% control limit at 76.1%. The duplicate LCS for Ammonia and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Chromium VI, Sulfate, Nitrate Nitrite, Ammonia and Oil and Grease sample B161C3 and Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate and Nitrate Nitrite sample B161C4 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 sample B161C3 and Percent Solids, Fluoride, Nitrite, Nitrate, Phosphate and Nitrate Nitrite sample B161C4 were within the 20% RPD control limit, however replicate analysis for Chloride and Sulfate sample B161C4 that were outside the control limit that may be attributed to sample inhomogeneity.

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 26 pages.

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



Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated
njp006-636/672

07-11-03
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, Nitrate, Phosphate, Sulfate		Method: EPA 300.0(mod.)	
Other: Nitrate, Nitrite, Ammonia		EPA 353.2(mod.) EPA 350.3	

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 07/03/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B161C3	% Solids	97.2	%	0.01	1.0
		Chloride by IC	1.3	u MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.29	u MG/KG	1.29	1.0
		Nitrate by IC	44.8	MG/KG	1.29	1.0
		Cyanide, Total	0.49	u MG/KG	0.49	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Chromium VI	0.41	u MG/KG	0.41	1.0
		Sulfate by IC	13.0	MG/KG	1.3	1.0
		Nitrate Nitrite	10.4	MG/KG	0.42	2.0
		Ammonia, as N	4.9	u MG/KG	4.9	1.0
		Oil & Grease Gravimetri	686	u MG/KG	686	1.0
		pH	9.0	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/03/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	03LICA39-MB1	Chloride by IC	1.2	u MG/KG	1.2	1.0
		Fluoride by IC	1.2	u MG/KG	1.2	1.0
		Nitrite by IC	1.25	u MG/KG	1.25	1.0
		Nitrate by IC	1.25	u MG/KG	1.25	1.0
		Phosphate by IC	1.2	u MG/KG	1.2	1.0
		Sulfate by IC	1.2	u MG/KG	1.2	1.0
BLANK1	03LC058-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0
BLANK10	03LV1052-MB1	Chromium VI	0.40	u MG/KG	0.40	1.0
BLANK10	03LN3B31-MB1	Nitrate Nitrite	0.20	u MG/KG	0.20	1.0
BLANK10	03LAMA16-MB1	Ammonia, as N	5.0	u MG/KG	5.0	1.0
BLANK10	03LOG029-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/03/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B161C3	Chloride by IC	51.4	1.0	51.4	97.9	2.0
		Fluoride by IC	51.8	0.46	51.4	99.8	2.0
		Nitrite by IC	50.9	1.29u	51.4	99.0	2.0
		Nitrate by IC	97.8	44.8	51.4	103.2	2.0
		Cyanide, Total	8.15	0.49u	8.51	95.7	1.0
		Phosphate by IC	50.2	1.3 u	51.4	97.7	2.0
		Soluble Chromium VI	4.1	0.41u	4.1	91.9	1.0
		Insoluble Chromium VI	1390	0.41u	1200	115.7	100
		Sulfate by IC	64.9	13.0	51.4	100.9	2.0
		Nitrate Nitrite	15.1	10.4	5.2	89.3	2.0
		Ammonia, as N	192	4.9 u	204	93.7	1.0
		Oil & Grease Gravimetr	4790	686 u	5980	80.0	1.0
BLANK10	03LICA39-MB1	Chloride by IC	23.9	1.2 u	25.0	95.8	1.0
		Fluoride by IC	24.2	1.2 u	25.0	97.0	1.0
		Nitrite by IC	23.5	1.25u	25.0	93.9	1.0
		Nitrate by IC	24.1	1.25u	25.0	96.4	1.0
		Phosphate by IC	24.4	1.2 u	25.0	97.4	1.0
		Sulfate by IC	24.4	1.2 u	25.0	97.8	1.0
BLANK10	03LVIO52-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.3	1.0
		Insoluble Chromium VI	1240	0.40u	1240	99.5	100
BLANK10	03LN3B31-MB1	Nitrate Nitrite	5.0	0.20u	5.0	100.4	1.0
BLANK10	03LAMA16-MB1	Ammonia, as N	180	5.0 u	200	90.0	1.0
		Ammonia, as N MSD	186	5.0 u	200	93.0	1.0
BLANK10	03LOGO29-MB1	Oil & Grease Gravimetr	4430	667 u	5810	76.1	1.0
		Oil & Grease - Grav M	4430	667 u	5810	76.1	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 07/03/03

CLIENT: TNUHANFORD F03-006 H2268
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	03LAMA16-MB1	Ammonia, as N	90.0	93.0	3.3
BLANK10	03LOG029-MB1	Oil & Grease - Grav	76.1	76.1	0.00

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/03/03

CLIENT: TNUHANFORD P03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	B161C3	‡ Solids	97.2	97.6	0.39	1.0
		Chloride by IC	1.3 u	1.3 u	NC	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.29u	1.29u	NC	1.0
		Nitrate by IC	44.8	49.1	9.2	1.0
		Cyanide, Total	0.49u	0.50u	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		Sulfate by IC	13.0	15.0	13.9	1.0
		Nitrate Nitrite	10.4	10.8	3.5	2.0
		Ammonia, as N	4.9 u	5.1 u	NC	1.0
		Oil & Grease Gravimetri	686 u	686 u	NC	1.0
		pH	9.0	9.0	0.0	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/03/03

CLIENT: TNUHANFORD F03-006 H2268
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L636

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LC058-LCS1	Cyanide, Total LCS	1.91	2.0	MG/KG	95.4
LCSS2	03LC058-LCS2	Cyanide, Total LCS	9.92	10.0	MG/KG	99.2

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/07/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B161C4	% Solids	96.4	%	0.01	1.0
		Chloride by IC	2.1	MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.30	u MG/KG	1.30	1.0
		Nitrate by IC	26.9	MG/KG	1.30	1.0
		Cyanide, Total	0.42	u MG/KG	0.42	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	23.3	MG/KG	1.3	1.0
		Nitrate Nitrite	9.0	MG/KG	0.21	1.0
		Ammonia, as N	6.1	u MG/KG	6.1	1.0
		Oil & Grease Gravimetri	692	u MG/KG	692	1.0
		pH	9.0	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/07/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	03LICC40-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	03LC059-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0
BLANK10	03LVI052-MB1	Chromium VI	0.40	u MG/KG	0.40	1.0
BLANK10	03LN3B32-MB1	Nitrate, as N	0.20	u MG/KG	0.20	1.0
BLANK10	03LAMA16-MB1	Ammonia, as N	5.0	u MG/KG	5.0	1.0
BLANK10	03LOG029-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/07/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B161C4	Chloride by IC	53.0	2.1	52.0	97.8	2.0
		Fluoride by IC	52.4	0.40	52.0	99.9	2.0
		Nitrite by IC	50.7	1.30u	52.0	97.4	2.0
		Nitrate by IC	79.1	26.9	52.0	100.3	2.0
		Phosphate by IC	50.5	1.3 u	52.0	97.1	2.0
		Sulfate by IC	76.3	23.3	52.0	102.0	2.0
		Nitrate Nitrite	14.4	9.0	5.3	102.1	2.0
BLANK10	03LICC40-MB1	Chloride by IC	24.0	1.2 u	25.0	96.0	1.0
		Fluoride by IC	24.3	1.2 u	25.0	97.1	1.0
		Nitrite by IC	23.6	1.25u	25.0	94.6	1.0
		Nitrate by IC	24.0	1.25u	25.0	96.1	1.0
		Phosphate by IC	24.4	1.2 u	25.0	97.7	1.0
		Sulfate by IC	24.4	1.2 u	25.0	97.5	1.0
BLANK10	03LVI052-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.3	1.0
		Insoluble Chromium VI	1240	0.40u	1240	99.5	100
BLANK10	03LN3B32-MB1	Nitrate, as N	5.2	0.20u	5.0	103.0	1.0
BLANK10	03LAMA16-MB1	Ammonia, as N	180	5.0 u	200	90.0	1.0
		Ammonia, as N MSD	186	5.0 u	200	93.0	1.0
BLANK10	03LOG029-MB1	Oil & Grease Gravimetr	4430	667 u	5810	76.1	1.0
		Oil & Grease - Grav M	4430	667 u	5810	76.1	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 07/07/03

CLIENT: TNUHANFORD F03-006 H2268
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	03LAMA16-MB1	Ammonia, as N	90.0	93.0	3.3
BLANK10	03LOGO29-MB1	Oil & Grease - Grav	76.1	76.1	0.00

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/07/03

CLIENT: TNUHANFORD F03-006 H2268
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	B161C4	% Solids	96.4	96.6	0.24	1.0
		Chloride by IC	2.1	3.5	49.2	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.30u	1.30u	NC	1.0
		Nitrate by IC	26.9	29.5	9.1	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	23.3	29.3	23.1	1.0
		Nitrate Nitrite	9.0	8.7	4.0	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/07/03

CLIENT: TNUHANFORD P03-006 H2268
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0306L672

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LC059-LCS1	Cyanide, Total LCS	1.90	2.0	MG/KG	95.0
LCSS2	03LC059-LCS2	Cyanide, Total LCS	9.94	10.0	MG/KG	99.4



03062636

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU Hanford F03-006</u>	Refrigerator #	A	B	C	D	E	F
Est. Final Proj. Sampling Date	#/Type Container	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Project # <u>11343-606-001-9999-00</u>	Solid	10g	10g	10g	10g	10g	10g
Project Contact/Phone #	Volume	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Lionville Laboratory Project Manager <u>Delette Johnson</u>	Solid	250	60	60	125	60	60
OC Spec. Del. Std. TAT <u>30 days</u>	Preservatives	-	-	-	-	-	-
Date Rec'd <u>6-14-03</u>	Date Due <u>7/14/03</u>	ORGANIC			INORG		
		VOA	BNA (2)	Pea/PCB	Herb	Metal (3)	CN
						IC (4)	Ar
						NO ₃ /NO ₂	OH
						Hex	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 OC Chosen (S)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only									
			MS	MSD				0625 X	0820, 0520	0625 X	0820, 0520	met. ①	Inorg ①	IN3N9	IC06R	ICR6	
	001	B161C3	X	X	S	6-13-03	0900	X	X	X	X	X	X	X	X	X	

Special Instructions:

Saf # F03-006

DATE/REVISIONS:

- met ① 1. RCRA + Sb, Be, Bi, B, Cu, Ni
- Inorg ① 2. IC = Cl, F, NO₃, NO₂, PO₄, SO₄, NH₃N, IPH, ICNTD
- _____
- _____
- _____
- _____

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 Chilled <input checked="" type="checkbox"/> 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	Relinquished by	Received by	Date	Time
<u>Dee Ex</u>	<u>D. Johnson</u>	<u>6-14-03</u>	<u>10:05</u>	ORIGINAL	CREATED		
				REWRITTEN	WAS		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
7929 0867 4975

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-137		Page 1 of 1			
Collector Johansen/Pope/Pfister/Hughes		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-B-12 (C3246); (247.5-250')		SAF No. F03-006		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 02-405		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To JMO 6-9-03 EBERLINE SERVICES (Formerly TMA) <i>Acra</i>		Offsite Property No. A030 287			Bill of Lading/Air Bill No. SEE OSR							
POSSIBLE SAMPLE HAZARDS/REMARKS RADIOACTIVE TIE TO B171P6 <i>Ag 6-13-03</i> Tie TO B171P5 Radioactive Special Handling and/or Storage Cool 40C				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	125mL	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									
B161C3	SOIL	6-13-03	0900	X	X	X	X	X				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From J.S. POPE <i>Ag</i>		Date/Time 6-13-03 1120		Received By/Stored In <i>Greg Thomas</i>		Date/Time 6/13/03 1120		The lab is to achieve a detection limit of 50.0 µg/g for C+H. 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) 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) (6) Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Uranium, Carbon-14, Iodine-129, Nitrogen-15, Neptunium-237, Thorium-230, Uranium-235, Uranium-238, Total Lead, Isotopic Thorium (Thorium-232)				S=Soil SE=Solid SO=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
Relinquished By/Removed From <i>Greg Thomas</i>		Date/Time 6/13/03 1125		Received By/Stored In ERC		Date/Time 6-13-03						
Relinquished By/Removed From <i>R. E. Pope</i>		Date/Time 6-13-03 1125		Received By/Stored In Fed Ex		Date/Time						
Relinquished By/Removed From <i>Debra</i>		Date/Time 6-14-03/10:05		Received By/Stored In <i>J. Hulstrom</i>		Date/Time 6-14-03/10:05						
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 Hanford
Purchase Order/Project:

DATE: 6.14.03

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

Laboratory SDG #: 0306L636

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-02-405 / 0.3°C

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

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-138		Page 1 of 1			
Collector <i>W. R. Johnson/Pope/Pfister</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 <i>6-18-3 RF</i> 216-B-12 (C3246); (294.5-297)		302-304.5'		SAF No. F03-006		Air Quality <input type="checkbox"/>				
Ice Chest No. <i>ERC 02-001</i>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To <i>M/S 6-9-03</i> EDERLINE SERVICES (Formerly TMA) <i>Pella</i>		Offsite Property No. <i>0050289</i>				Bill of Lading/Air Bill No. <i>SFE 05PC</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS <i>RADIOACTIVE TIE TO: B171P B171PS</i> <i>RF 6-19-03</i> Special Handling and/or Storage <i>COOL 4C</i>			Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	None	None	
			Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
			No. of Container(s)	1	1	1	1	1	1	1	1	1
			Volume	60mL	125mL	60mL	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.	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.	Tridium - H3		
			Sample No.	Matrix *	Sample Date	Sample Time						
B161C4	SOIL	6-18-3	1305	X	X	X	X	X				
CHAIN OF POSSESSION			Sign/Print Names			SPECIAL INSTRUCTIONS					Matrix *	
Relinquished By/Removed From <i>R. PFISTER</i>		Date/Time 6-18-3 1444	Received By/Stored In <i>MO-026 FR16 #1</i>		Date/Time 6-18-3 1444	The lab is to achieve a detection limit of 50.0 µg/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) 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, Thor-232, Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Lithium) <i>6-19-03</i> (6) <i>Feb 19, 5-19-90 - Total Sr, Isotopic Thorium (Thorium-232)</i>					S=Soil SE=Solvent SD=Solid SL=Sledge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From <i>MO-026 FR16 #1</i>		Date/Time 6-19-03 0835	Received By/Stored In <i>M. Johnson</i>		Date/Time 6-19-03 0835							
Relinquished By/Removed From <i>M. Johnson</i>		Date/Time 6-19-03 0850	Received By/Stored In <i>Fed Ex</i>		Date/Time 6-19-03 10-19-03 0800							
Relinquished By/Removed From <i>Fed Ex</i>		Date/Time	Received By/Stored In <i>J. Kery</i>		Date/Time 6/20/03 0940							
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 Hamford
Purchase Order/Project:

DATE: 6.20.03

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

Laboratory SDG #:

03064672

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 # |
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| 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 # |
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| 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:

See 02-001 / 1.4°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager: