0059234

SAF-B02-065
618-5 Burial Ground – Anomalous Waste (Solids)
FINAL DATA PACKAGE

FAX RESULTS TO:

Jeff Lerch 373-5373 _____N/A_____
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Jeff Lerch _____N/A_____
INITIAL/DATE

MAIL COMPLETE COPY OF DATA PACKAGE TO:

Jeff Lerch L6-06 _____N/A_____
INITIAL/DATE

Doug Bowers H9-09 _____N/A_____
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG ___(H2043)___ SAF-B02-065

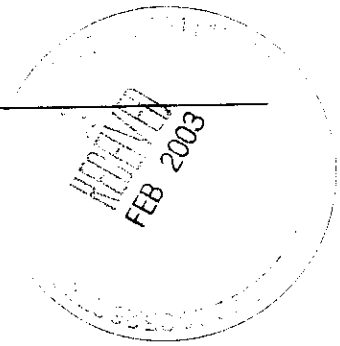
Rad only Chem only X Rad & Chem

X Complete Partial

EDMC

LIONVILLE LABORATORY INC.

29 January 2003



Joan Kessner
Bechtel-Hanford, Inc.
3190 Washington Way
MSIN H9-03
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	0301L497
SDG #	H2043
SAF #	B02-065
Date Received	1-15-03
# Samples	2
Matrix	Other Solid
Volatiles	X
Semivolatiles	X
Pest/PCB	
DRO	
GRO	
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

r:\group\pm\orlette\tmu-hanford\data\b_ltrs.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00FB8	001	M1 SO	03LVH006	01/03/03	N/A	01/16/03
J00FD1	002	M1 SO	03LVH006	01/03/03	N/A	01/16/03
LAB QC:						
VBLKEK	MB1	S	03LVH006	N/A	N/A	01/16/03

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-065
LVL #: 0301L497
SDG/SAF # H2043/B02-065

W.O. #: 11343-606-001-9999-00
Date Received: 01-15-2003

GC/MS VOLATILE

Two (2) solid samples were collected on 01-03-2003.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL volatile target compounds on 01-16-2003.

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

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

2. The required holding time for analysis was met.

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

4. Both samples were analyzed medium level and required an additional dilution due to the ignitability of the solid sample matrix.

5. All surrogate recoveries were within EPA QC limits.

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

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.

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

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."

by _____ 01-24-03

J. Michael Taylor
President
Lionville Laboratory Incorporated

Date

som\group\data\voa\tnu-hanford\0301-497.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

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.

GLOSSARY OF VOA DATA

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.
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.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List — Report Date: 01/22/03 09:47

RFW Batch Number: 0301L497 — Client: TNUHANFORD B02-065 H2043 — Work Order: 11343606001 — Page: 1a

	Cust ID:	J00FB8		J00FD1		VBLKEK	
Sample Information	RFW#:	001		002		03LVH006-MB1	
	Matrix:	SOLID		SOLID		SOIL	
	D.F.:	14.0		14.3		8.00	
	Units:	ug/Kg		ug/Kg		ug/Kg	
	Level:	MED		MED		MED	
Surrogate Recovery	Toluene-d8	83	%	86	%	85	%
	Bromofluorobenzene	92	%	96	%	86	%
	1,2-Dichloroethane-d4	82	%	86	%	82	%
Chloromethane		8800	U	8900	U	5000	U
Bromomethane		8800	U	8900	U	5000	U
Vinyl Chloride		8800	U	8900	U	5000	U
Chloroethane		8800	U	8900	U	5000	U
Methylene Chloride		9300	B	6900	B	2400	J
Acetone		8800	U	8900	U	5000	U
Carbon Disulfide		4400	U	4500	U	2500	U
1,1-Dichloroethene		4400	U	4500	U	2500	U
1,1-Dichloroethane		4400	U	4500	U	2500	U
1,2-Dichloroethene (total)		4400	U	4500	U	2500	U
Chloroform		4400	U	4500	U	2500	U
1,2-Dichloroethane		4400	U	4500	U	2500	U
2-Butanone		8800	U	8900	U	5000	U
1,1,1-Trichloroethane		4400	U	4500	U	2500	U
Carbon Tetrachloride		4400	U	4500	U	2500	U
Bromodichloromethane		4400	U	4500	U	2500	U
1,2-Dichloropropane		4400	U	4500	U	2500	U
cis-1,3-Dichloropropene		4400	U	4500	U	2500	U
Trichloroethene		4400	U	4500	U	2500	U
Dibromochloromethane		4400	U	4500	U	2500	U
1,1,2-Trichloroethane		4400	U	4500	U	2500	U
Benzene		4400	U	4500	U	2500	U
Trans-1,3-Dichloropropene		4400	U	4500	U	2500	U
Bromoform		4400	U	4500	U	2500	U
4-Methyl-2-pentanone		8800	U	8900	U	5000	U
2-Hexanone		8800	U	8900	U	5000	U
Tetrachloroethene		4400	U	4500	U	2500	U
1,1,2,2-Tetrachloroethane		4400	U	4500	U	2500	U
Toluene		4400	U	4500	U	2500	U

*= Outside of EPA CLP QC limits.

	Cust ID:	J00FB8		J00FD1		VBLKEK	
	RFW#:	001		002		03LVH006-MB1	
	Level:	MED		MED		MED	
Chlorobenzene		4400	U	4500	U	2500	U
Ethylbenzene		4400	U	4500	U	2500	U
Styrene		4400	U	4500	U	2500	U
Xylene (total)		4400.	U	4500	U	2500	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J00FB8

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) SOLID Lab Sample ID: 0301L497-001

Sample wt/vol: 0.570 (g/mL) G Lab File ID: h011604

Level: (low/med) MED Date Received: 01/15/03

% Moisture: not dec. 0 Date Analyzed: 01/16/03

Column: (pack/cap) CAP Dilution Factor: 14.0

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		SILOXANE	18.336	5000	JB
2.		SILOXANE	25.523	4000	J

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

J00FD1

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) SOLID Lab Sample ID: 0301L497-002

Sample wt/vol: 0.560 (g/mL) G Lab File ID: h011605

Level: (low/med) MED Date Received: 01/15/03

% Moisture: not dec. 0 Date Analyzed: 01/16/03

Column: (pack/cap) CAP Dilution Factor: 14.3

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		SILOXANE	18.326	4000	JB
2.		SILOXANE	25.523	8000	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKEK

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) SOIL Lab Sample ID: 03LVH006-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: h011603

Level: (low/med) MED Date Received: 01/16/03

% Moisture: not dec. 0 Date Analyzed: 01/16/03

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	18.289	5000	J

(b) VOA BNA Metals Mg Nickel

Lionville Laboratory Use Only

0301L497

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A

Client TNU-Hanford B02-065

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del SD TAT 3 ~~5~~ days

Date Rec'd 1-15-03 Date Due 1-22-03 (18)

Refrigerator #			5
#/Type Container	Liquid		
	Solid		1 PL
Volume	Liquid		
	Solid		125
Preservatives			-

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: 0624H	0625H	MET	INORG
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	J00FB8			SO	1-3-03	1130	1	✓	✓	✓
	002	J00FD1			1	1	1142	1	✓	✓	✓

Special Instructions: SAF # B02-065

CAUTION: Possibly Spontaneous Combustable Samples

Limited Volume Received

Perform analyses in the following order:

① metals ② Anions ③ VOA ④ BNA

DATE/REVISIONS:

MCT ① 1. As, Be, Pb, Se, Tl, Hg

INORG ① 2. ICCl, ICFl, ICNO3, ICNO2, ICPO4, ICSO4,

3. ICNTO, ISFD, IPH

1-16-03 4. Change TAT = 3 day Add metals Al, Ag, Ba, Ca,

5. Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped or Hand Delivered

Airbill # 447-053018

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 20° °C

NOTES: NO3/NO2/PO4

Relinquished by	Received by	Date	Time
Yellow Freight		1-15-03	1500

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		
Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH
Project Designation: 618-5 Burial Ground - Anomalous Waste (Solids)	Sampling Location: 300-FF-1 618-5 Burial Ground		SAF No.: B02-065
Ice Chest No.	Field Logbook No.: EL 1395-7	COA: RG61852600	Method of Shipment: Ground transportation, truck
Shipped To: TMA/RECRA	Offsite Property No.		Bill of Lading/Air Bill No.

Price Code — Data Turnaround: Air Quality ☐ ASAP

POSSIBLE SAMPLE HAZARDS/REMARKS

possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C								
Type of Container	P	P	P	P								
No. of Container(s)	0	0	1	0								
Volume	125mL	125mL	125mL	125mL								
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.								
Sample No.	Matrix *	Sample Date	Sample Time									
J00FB8	OTHER SOLID	1-3-03	1130	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	1-3-03/1130	300FF-1 RMSA	1-3-03/1130
300FF-1 RMSA	1-6-03/1000	Doug Bowers (Doug Bowers)	1-6-03/1000
Doug Bowers Doug Bowers	1-6-03/1030	Roadway (ground)	1-6-03/1030

SPECIAL INSTRUCTIONS

All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-065-48	Page 1 of 1
Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Data Turnaround Air Quality ☐ ASAP
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-065	
Ice Chest No.	Field Logbook No. EL1395-7	COA RG61852600	Method of Shipment Ground transportation, truck	
Shipped To TMA/RECRA	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS												
possibly pyrophoric metal Special Handling and/or Storage	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
	Type of Container	P	P	P	G/P							
	No. of Container(s)	0	0	1	0							
	Volume	125mL	125mL	125mL	125g							
SAMPLE ANALYSIS		VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time									
J00FD1	OTHER SOLID	1-3-03	1142	X	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time Bowers 1-3-03/1230	Received By/Stored In 300FF-1 RMSA	Date/Time 1-3-03/1230
Relinquished By/Removed From 300FF-1 RMSA	Date/Time 1-6-03/1000	Received By/Stored In Doug Bowers	Date/Time 1-6-03/1000
Relinquished By/Removed From Doug Bowers	Date/Time Bowers 1-6-03/1030	Received By/Stored In Roadway (ground)	Date/Time 1-6-03 1030
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

SPECIAL INSTRUCTIONS

All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU-Hanford

Purchase Order/Project: B02-065

DATE: 1-15-03

WF# / SOW# / Release #:

Laboratory SDG #: 0301L497

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

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No	☐ N/A	☐ see Comment # (1)
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date) DT / 1-15-03	☑ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

(2) 20°C

(1) Received NO_3 NO_2 PO_4 Out of Hold

Laboratory Sample Custodian: J. M. Mah

Laboratory Project Manager:

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00FB8	001	SO	03LE0061	01/03/03	01/16/03	01/16/03
J00FD1	002	SO	03LE0061	01/03/03	01/16/03	01/16/03
LAB QC:						
SBLKLE	MB1	S	03LE0061	N/A	01/16/03	01/16/03
SBLKLE	MB1 BS	S	03LE0061	N/A	01/16/03	01/16/03

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-065
LVL #: 0301L497
SDG/SAF # H2043/B02-065

W.O. #: 11343-606-001-9999-00
Date Received: 01-15-2003

SEMIVOLATILE

Two (2) solid samples were collected on 01-03-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on modified method 3580A (3g of sample extracted with 5mL of DCM) on 01-16-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 01-16-2003.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. Matrix spike analyses were not performed due to insufficient sample volume.
6. All blank spike recoveries were within EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. The sample results have reported on an 'as received' basis due to insufficient sample volume.
9. The 5-fold dilution factor appears on the Summary report is due to the final volume used for the analysis. The reporting limits have been adjusted accordingly. A copy of the Sample Extraction Record has been enclosed.
10. 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").
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
President
Lionville Laboratory Incorporated

01-21-03
Date

som\gorup\data\bna\tnu-hanford-0301-497.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 01/21/03 12:52

RFW Batch Number: 0301L497 — Client: TNUHANFORD B02-065 H2043 — Work Order: 11343606001 — Page: 1a

	Cust ID:	J00FB8		J00FD1		SBLKLE		SBLKLE BS	
Sample Information	RFW#:	001		002		03LE0061-MB1		03LE0061-MB1	
	Matrix:	SOLID		SOLID		SOIL		SOIL	
	D.F.:	5.00		5.00		5.00		5.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	97	%	99	%	91	%	93	%
	2-Fluorobiphenyl	96	%	100	%	96	%	103	%
	Terphenyl-d14	116	%	111	%	101	%	102	%
	Phenol-d5	99	%	92	%	98	%	88	%
	2-Fluorophenol	90	%	94	%	94	%	83	%
	2,4,6-Tribromophenol	68	%	79	%	63	%	83	%
Phenol		15000	U	17000	U	17000	U	78	%
bis(2-Chloroethyl)ether		15000	U	17000	U	17000	U	17000	U
2-Chlorophenol		15000	U	17000	U	17000	U	79	%
1,3-Dichlorobenzene		15000	U	17000	U	17000	U	17000	U
1,4-Dichlorobenzene		15000	U	17000	U	17000	U	91	%
1,2-Dichlorobenzene		15000	U	17000	U	17000	U	17000	U
2-Methylphenol		15000	U	17000	U	17000	U	17000	U
2,2'-oxybis(1-Chloropropane)		15000	U	17000	U	17000	U	17000	U
3- and/or 4-Methylphenol		15000	U	17000	U	17000	U	17000	U
N-Nitroso-di-n-propylamine		15000	U	17000	U	17000	U	80	%
Hexachloroethane		15000	U	17000	U	17000	U	17000	U
Nitrobenzene		15000	U	17000	U	17000	U	17000	U
Isophorone		15000	U	17000	U	17000	U	17000	U
2-Nitrophenol		15000	U	17000	U	17000	U	17000	U
2,4-Dimethylphenol		15000	U	17000	U	17000	U	17000	U
bis(2-Chloroethoxy)methane		15000	U	17000	U	17000	U	17000	U
2,4-Dichlorophenol		15000	U	17000	U	17000	U	17000	U
1,2,4-Trichlorobenzene		15000	U	17000	U	17000	U	86	%
Naphthalene		15000	U	17000	U	17000	U	17000	U
4-Chloroaniline		15000	U	17000	U	17000	U	17000	U
Hexachlorobutadiene		15000	U	17000	U	17000	U	17000	U
4-Chloro-3-methylphenol		15000	U	17000	U	17000	U	59	%
2-Methylnaphthalene		15000	U	17000	U	17000	U	17000	U
Hexachlorocyclopentadiene		15000	U	17000	U	17000	U	17000	U
2,4,6-Trichlorophenol		15000	U	17000	U	17000	U	17000	U
2,4,5-Trichlorophenol		37000	U	41000	U	42000	U	42000	U

*= Outside of EPA CLP QC limits.

Cust ID:	J00FB8		J00FD1		SBLKLE		SBLKLE BS	
RFW#:	001		002		03LE0061-MB1		03LE0061-MB1	
2-Chloronaphthalene	15000	U	17000	U	17000	U	17000	U
2-Nitroaniline	37000	U	41000	U	42000	U	42000	U
Dimethylphthalate	15000	U	17000	U	17000	U	17000	U
Acenaphthylene	15000	U	17000	U	17000	U	17000	U
2,6-Dinitrotoluene	15000	U	17000	U	17000	U	17000	U
3-Nitroaniline	37000	U	41000	U	42000	U	42000	U
Acenaphthene	15000	U	17000	U	17000	U	87	%
2,4-Dinitrophenol	37000	U	41000	U	42000	U	42000	U
4-Nitrophenol	37000	U	41000	U	42000	U	67	%
Dibenzofuran	15000	U	17000	U	17000	U	17000	U
2,4-Dinitrotoluene	15000	U	17000	U	17000	U	61	%
Diethylphthalate	15000	U	17000	U	17000	U	17000	U
4-Chlorophenyl-phenylether	15000	U	17000	U	17000	U	17000	U
Fluorene	15000	U	17000	U	17000	U	17000	U
4-Nitroaniline	37000	U	41000	U	42000	U	42000	U
4,6-Dinitro-2-methylphenol	37000	U	41000	U	42000	U	42000	U
N-Nitrosodiphenylamine (1)	15000	U	17000	U	17000	U	17000	U
4-Bromophenyl-phenylether	15000	U	17000	U	17000	U	17000	U
Hexachlorobenzene	15000	U	17000	U	17000	U	17000	U
Pentachlorophenol	37000	U	41000	U	42000	U	62	%
Phenanthrene	15000	U	17000	U	17000	U	17000	U
Anthracene	15000	U	17000	U	17000	U	17000	U
Carbazole	15000	U	17000	U	17000	U	17000	U
Di-n-butylphthalate	15000	U	17000	U	17000	U	17000	U
Fluoranthene	15000	U	17000	U	17000	U	17000	U
Pyrene	15000	U	17000	U	17000	U	90	%
Butylbenzylphthalate	15000	U	17000	U	17000	U	17000	U
3,3'-Dichlorobenzidine	15000	U	17000	U	17000	U	17000	U
Benzo(a)anthracene	15000	U	17000	U	17000	U	17000	U
Chrysene	15000	U	17000	U	17000	U	17000	U
bis(2-Ethylhexyl)phthalate	15000	U	17000	U	17000	U	17000	U
Di-n-octyl phthalate	15000	U	17000	U	17000	U	17000	U
Benzo(b)fluoranthene	15000	U	17000	U	17000	U	17000	U
Benzo(k)fluoranthene	15000	U	17000	U	17000	U	17000	U
Benzo(a)pyrene	15000	U	17000	U	17000	U	17000	U
Indeno(1,2,3-cd)pyrene	15000	U	17000	U	17000	U	17000	U
Dibenz(a,h)anthracene	15000	U	17000	U	17000	U	17000	U
Benzo(g,h,i)perylene	15000	U	17000	U	17000	U	17000	U

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

⑥ VOA BNA Metals DIG Nicki

Lionville Laboratory Use Only
03014497

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B02-065
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 3 ~~7~~ days
Date Rec'd: 1-15-03 Date Due: 1-18-03 (1-22-03)

	A
Refrigerator #	5
#/Type Container – Liquid	
#/Type Container – Solid	1 PL
Volume – Liquid	
Volume – Solid	125
Preservatives	—

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: 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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	MCT①	INORG①
001	J00FB8			SO	1-3-03	1130	1	✓	✓	✓
002	J00FD1			↓	↓	1142	1	✓	✓	✓

Special Instructions: SAF # B02-065

CAUTION: Possibly Spontaneous Combustible Samples

Limited Volume Received

Perform analyses in the following order: ① metals ② Anion ③ VOA ④ BNA

DATE/REVISIONS:
MCT① 1. As, Be, Pb, Se, Tl, Hg
INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,
3. ICNH3, ISFD, IPH
1-16-03 4. Change TAT = 3 day Add metals Al, Ag, Ba, Ca,
5. Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn
6.

Relinquished by	Received by	Date	Time
Yellow Freight	[signature]	1-15-03	1500

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

Lionville Laboratory Use Only

Samples were:
1) (Shipped) or Hand Delivered
Airbill # 447-053018
2) (Ambient) or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times ~~Y~~ or (N) NO3/NO2/PO4

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 20° °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-47	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Doug Bowers	Jeff Lerch 373-5904	KESSNER, JH	Air Quality ☐ ASAP
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	**Sampling Location** 300-FF-1 618-5 Burial Ground	**SAF No.** B02-065	
Ice Chest No.	**Field Logbook No.** EL-1395-7 / **COA** RG61852600	**Method of Shipment** Ground transportation, truck	
Shipped To TMA/RECRA	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS
possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	P	P	P	P							
No. of Container(s)	0	0	1	0							
Volume	125mL	125mL	125mL	125mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time									
J00FB8	OTHER SOLID	1-3-03	1130	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	1-3-03/1130	300FF-1 RMSA	1-3-03/1130
300-FF-1 RMSA	1-6-03/1000	Doug Bowers Doug Bowers	1-6-03/1000
Doug Bowers Doug Bowers	1-6-03/1030	Roadway (ground)	1-6-03/1030

SPECIAL INSTRUCTIONS
All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride. Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-40

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
Doug Bowers	Jeff Lerch	373-5904	KESSNER, JH	Air Quality ☐	ASAP

Project Designation	Sampling Location	SAF No.	Method of Shipment
618-5 Burial Ground - Anomalous Waste (Solids)	300-FF-1 618-5 Burial Ground	B02-065	Ground transportation, truck

Ice Chest No.	Field Logbook No.	COA	Bill of Lading/Air Bill No.
	EL 1395-7	RG61852600	—

Shipped To	Offsite Property No.
TMA/RECRA	

POSSIBLE SAMPLE HAZARDS/REMARKS

possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	P	P	P	G/P							
No. of Container(s)	0	0	1	0							
Volume	125mL	125mL	125mL	125g							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J00FD1	OTHER SOLID	1-3-03	1142	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
Doug Bowers Bowers 1-3-03/1230	300FF-1 RMSA 1-3-03-/1230		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
300FF-1 RMSA 1-6-03/1000	Doug Bowers Doug Bowers 1-6-03/1000		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
Doug Bowers Bowers 1-6-03/1030 (1142 MHH)	Roadway (ground) 1030		
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		

SPECIAL INSTRUCTIONS

All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU-Hanford

Purchase Order/Project: B02-065

DATE: 1-15-03

WF# / SOW# / Release #:

Laboratory SDG #: 0301L497

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

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10. Shipment meets LvL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No	☐ N/A	☐ see Comment # (2)
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date) DT / 1-15-03	☑ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

(2) 20°C

(1) Received NO_3 NO_2 PO_4 Out of Hold

Laboratory Sample Custodian: J. M. Mahn

Laboratory Project Manager:

Lionville Laboratory, Inc.

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 01/16/03 Extraction Batch No: 03LE0061 Analyst: JA Method: ****

Test: 0625 Cleanup Date: Analyst: Client: TNUHANFORD B02-065 H2043

LIMS Report Date: 01/16/03 Solvent: DCM Adsorbent:

Sample No:		Client Name / Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0301L497-		TNUHANFORD B02-065 H2043										
001	H	J00FB8	7	3.41	1.0		5.0		0.5	N	0.0	733.1
002	H	J00FD1	7	3.02	1.0		5.0		0.5	N	0.0	827.8
03LE0061-MB1	H	SBLKLE	7	3.00	1.0		5.0		0.5	N	100.00	833.3
03LE0061-MB1	HS	SBLKLE	7	3.00	1.0	1.0	5.0		0.5	N	100.00	833.3

Comments:
Surrogate: 500 UL ESU 89912108
Spike: 500 UL EMS 89912202

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
revision for multiplier	1/16/03 MK				

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00FB8						
SILVER, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
SILVER, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
SILVER, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
ALUMINUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
ALUMINUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
ALUMINUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
ARSENIC, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
ARSENIC, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
ARSENIC, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
BORON, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
BORON, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
BORON, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
BARIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
BARIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
BARIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
BERYLLIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
BERYLLIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
BERYLLIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
CALCIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
CALCIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
CALCIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
CADMIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
CADMIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
CADMIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
COBALT, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
COBALT, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
COBALT, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
CHROMIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
CHROMIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
CHROMIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
COPPER, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
COPPER, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
COPPER, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
IRON, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
IRON, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
MERCURY, TOTAL	001	SO	03C0006	01/03/03	01/16/03	01/16/03
POTASSIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
POTASSIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
POTASSIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
LITHIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
LITHIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
LITHIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
MAGNESIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
MAGNESIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
MAGNESIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
MANGANESE, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
MANGANESE, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
MANGANESE, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
MOLYBDENUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
MOLYBDENUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
MOLYBDENUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
SODIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
SODIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
SODIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
NICKEL, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
NICKEL, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
NICKEL, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
LEAD, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
LEAD, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
LEAD, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
ANTIMONY, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
ANTIMONY, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
ANTIMONY, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
SELENIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
SELENIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
SELENIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
TIN, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
TIN, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
TIN, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
STRONTIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
STRONTIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
STRONTIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TITANIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
TITANIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
TITANIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
THALLIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
THALLIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
THALLIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
URANIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
URANIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
URANIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
VANADIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
VANADIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
VANADIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
ZINC, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
ZINC, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
ZINC, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
ZIRCONIUM, TOTAL	001	SO	03L0021	01/03/03	01/16/03	01/16/03
ZIRCONIUM, TOTAL	001 REP	SO	03L0021	01/03/03	01/16/03	01/16/03
ZIRCONIUM, TOTAL	001 MS	SO	03L0021	01/03/03	01/16/03	01/16/03
J00FD1						
SILVER, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
ALUMINUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
ARSENIC, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
BORON, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
BARIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
BERYLLIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
CALCIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
CADMIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
COBALT, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
CHROMIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
COPPER, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
IRON, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
MERCURY, TOTAL	002	SO	03C0006	01/03/03	01/16/03	01/16/03
MERCURY, TOTAL	002 REP	SO	03C0006	01/03/03	01/16/03	01/16/03
MERCURY, TOTAL	002 MS	SO	03C0006	01/03/03	01/16/03	01/16/03
POTASSIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
LITHIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
MANGANESE, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
MOLYBDENUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
SODIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
NICKEL, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
LEAD, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
ANTIMONY, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
SELENIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
TIN, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
STRONTIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
TITANIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
THALLIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
URANIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
VANADIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
ZINC, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03
ZIRCONIUM, TOTAL	002	SO	03L0021	01/03/03	01/16/03	01/16/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
SILVER, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
ALUMINUM LABORTORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
ALUMINUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
ARSENIC LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
ARSENIC, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
BORON LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
BORON, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
BARIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
BARIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
BERYLLIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
CALCIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
CALCIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
CADMIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
CADMIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
COBALT LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
COBALT, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
CHROMIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03

Lionville Laboratory, Inc.
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TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
COPPER LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
COPPER, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
IRON LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
IRON, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
MERCURY LABORATORY	LC1 BS	S	03C0006	N/A	01/16/03	01/16/03
MERCURY, TOTAL	MB1	S	03C0006	N/A	01/16/03	01/16/03
POTASSIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
POTASSIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
LITHIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
LITHIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
MAGNESIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
MAGNESIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
MANGANESE LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
MANGANESE, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
MOLYBDENUM LABORATOR	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
MOLYBDENUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
SODIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
SODIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
NICKEL LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
NICKEL, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
LEAD LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
LEAD, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
ANTIMONY LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
ANTIMONY, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
SELENIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
SELENIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
TIN LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
TIN, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
STRONTIUM LCS STANDA	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
STRONTIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
TITANIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
TITANIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
THALLIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
THALLIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
URANIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
URANIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
VANADIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03

Lionville Laboratory, Inc.
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TNUHANFORD B02-065 H2043

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VANADIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
ZINC LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
ZINC, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03
ZIRCONIUM LABORATORY	LC1 BS	S	03L0021	N/A	01/16/03	01/16/03
ZIRCONIUM, TOTAL	MB1	S	03L0021	N/A	01/16/03	01/16/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-065
LVL#: 0301L497
SDG/SAF#: H2043/B02-065

W.O.#: 11343-606-001-9999-00
Date Received: 01-15-03

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Uranium and Zirconium, which were not spiked into the LCS. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 15 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J00FB8	Aluminum	10,000	89.3
	Silver	6000	83.8
	Barium	6000	82.9
	Chromium	6000	82.6
	Iron	20,000	107.6
	Copper	6000	84.6
	Lithium	6000	100.9
	Manganese	6000	99.5
	Nickel	6000	77.2
	Lead	1100	109.8
	Tin	1200	95.4
	Titanium	1200	95.6
	Zinc	6000	77.0
	Zirconium	6000	95.9

12. The duplicate analyses for 11 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.

Pat C

01-27-03

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

jjw/m01-497

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0301L497

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	X6010B		__200.7				__99
Antimony	X6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	X6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	X6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X6010B		__200.7				__99
Copper	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X6010B		__200.7				__99
Lead	X6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	X6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X6010B		__200.7				__99
Manganese	X6010B		__200.7				__99
Mercury	__7470A [3]	X7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	X6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	X6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	X6010B		__200.7				__99
Thallium	X6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	X6010B		__200.7				__99
Titanium	X6010B		__200.7				__99
Uranium	X6010B [1]		__200.7 [1]			__1620	__99
Vanadium	X6010B		__200.7				__99
Zinc	X6010B		__200.7				__99
Zirconium	X6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. 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, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00FB8	Silver, Total	16.0	MG/KG	0.79	6.0
		Aluminum, Total	17600	MG/KG	3.3	1.0
		Arsenic, Total	4.9	MG/KG	0.36	1.0
		Boron, Total	46.3	MG/KG	1.2	6.0
		Barium, Total	603	MG/KG	0.17	6.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	11900	MG/KG	1.8	1.0
		Cadmium, Total	3.0	MG/KG	0.04	1.0
		Cobalt, Total	13.5	MG/KG	0.15	1.0
		Chromium, Total	573	MG/KG	0.57	6.0
		Copper, Total	1600	MG/KG	0.74	6.0
		Iron, Total	44500	MG/KG	11.5	6.0
		Mercury, Total	1.8	MG/KG	0.03	2.0
		Potassium, Total	1030	MG/KG	3.5	1.0
		Lithium, Total	50.1	MG/KG	0.17	6.0
		Magnesium, Total	2650	MG/KG	0.93	1.0
		Manganese, Total	617	MG/KG	0.11	6.0
		Molybdenum, Total	23.4	MG/KG	0.16	1.0
		Sodium, Total	1000	MG/KG	1.8	1.0
		Nickel, Total	684	MG/KG	0.74	6.0
		Lead, Total	468	MG/KG	0.23	1.0
		Antimony, Total	7.9	MG/KG	0.16	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Tin, Total	361	MG/KG	1.9	6.0
		Strontium, Total	59.8	MG/KG	0.06	6.0
		Titanium, Total	783	MG/KG	0.23	6.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Uranium, Total	168	MG/KG	2.4	1.0
		Vanadium, Total	30.4	MG/KG	0.09	1.0
		Zinc, Total	1300	MG/KG	0.45	6.0
		Zirconium, Total	3000	MG/KG	3.7	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J00FD1	Silver, Total	21.1	MG/KG	1.3	12.0
		Aluminum, Total	19300	MG/KG	5.4	2.0
		Arsenic, Total	6.0	MG/KG	0.58	2.0
		Boron, Total	114	MG/KG	1.9	12.0
		Barium, Total	274	MG/KG	0.28	12.0
		Beryllium, Total	0.03 u	MG/KG	0.03	2.0
		Calcium, Total	7600	MG/KG	3.0	2.0
		Cadmium, Total	5.4	MG/KG	0.06	2.0
		Cobalt, Total	40.4	MG/KG	0.25	2.0
		Chromium, Total	5060	MG/KG	0.92	12.0
		Copper, Total	2100	MG/KG	1.2	12.0
		Iron, Total	141000	MG/KG	18.7	12.0
		Mercury, Total	6.5	MG/KG	0.15	10.0
		Potassium, Total	487	MG/KG	5.6	2.0
		Lithium, Total	61.2	MG/KG	0.28	12.0
		Magnesium, Total	1380	MG/KG	1.5	2.0
		Manganese, Total	994	MG/KG	0.18	12.0
		Molybdenum, Total	247	MG/KG	0.26	2.0
		Sodium, Total	1400	MG/KG	2.9	2.0
		Nickel, Total	3230	MG/KG	1.2	12.0
		Lead, Total	929	MG/KG	0.37	2.0
		Antimony, Total	28.0	MG/KG	0.26	2.0
		Selenium, Total	0.58 u	MG/KG	0.58	2.0
		Tin, Total	44.9	MG/KG	3.0	12.0
		Strontium, Total	32.4	MG/KG	0.09	12.0
		Titanium, Total	310	MG/KG	0.37	12.0
		Thallium, Total	0.86 u	MG/KG	0.86	2.0
		Uranium, Total	222	MG/KG	4.0	2.0
		Vanadium, Total	81.8	MG/KG	0.15	2.0
		Zinc, Total	2540	MG/KG	0.74	12.0
		Zirconium, Total	13200	MG/KG	6.0	2.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0021-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	3.5 u	MG/KG	3.5	1.0
		Arsenic, Total	0.38 u	MG/KG	0.38	1.0
		Boron, Total	0.32	MG/KG	0.21	1.0
		Barium, Total	0.03 u	MG/KG	0.03	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	2.0 u	MG/KG	2.0	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.16 u	MG/KG	0.16	1.0
		Chromium, Total	0.10 u	MG/KG	0.10	1.0
		Copper, Total	0.13 u	MG/KG	0.13	1.0
		Iron, Total	2.0 u	MG/KG	2.0	1.0
		Potassium, Total	3.7 u	MG/KG	3.7	1.0
		Lithium, Total	0.03 u	MG/KG	0.03	1.0
		Magnesium, Total	0.99 u	MG/KG	0.99	1.0
		Manganese, Total	0.02 u	MG/KG	0.02	1.0
		Molybdenum, Total	0.17 u	MG/KG	0.17	1.0
		Sodium, Total	1.9 u	MG/KG	1.9	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.24 u	MG/KG	0.24	1.0
		Antimony, Total	0.17 u	MG/KG	0.17	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Tin, Total	1.3	MG/KG	0.33	1.0
		Strontium, Total	0.01 u	MG/KG	0.01	1.0
		Titanium, Total	0.09	MG/KG	0.04	1.0
		Thallium, Total	0.56 u	MG/KG	0.56	1.0
		Uranium, Total	2.6 u	MG/KG	2.6	1.0
		Vanadium, Total	0.10 u	MG/KG	0.10	1.0
		Zinc, Total	1.0	MG/KG	0.08	1.0
		Zirconium, Total	3.9 u	MG/KG	3.9	1.0
BLANK1	03C0006-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00FB8	Silver, Total	22.2	16.0	4.8	129.2	6.0
		Aluminum, Total	18500	17600	192	509.8*	1.0
		Arsenic, Total	177	4.9	192	89.5	1.0
		Boron, Total	130	46.3	96.1	86.9	6.0
		Barium, Total	904	603	192	156.2	6.0
		Beryllium, Total	4.5	0.02u	4.8	93.8	1.0
		Calcium, Total	14400	11900	2400	102.6*	1.0
		Cadmium, Total	8.5	3.0	4.8	114.6	1.0
		Cobalt, Total	59.2	13.5	48.0	95.2	1.0
		Chromium, Total	340	573	19.2	-1200. *	6.0
		Copper, Total	1560	1600	24.0	-190. *	6.0
		Iron, Total	40800	44500	96.1	-3900. *	6.0
		Potassium, Total	3610	1030	2400	107.3	1.0
		Lithium, Total	182	50.1	96.1	136.9	6.0
		Magnesium, Total	5200	2650	2400	106.1	1.0
		Manganese, Total	4880	617	48.0	8874 *	6.0
		Molybdenum, Total	107	23.4	96.1	87.0	1.0
		Sodium, Total	3280	1000	2400	94.7	1.0
		Nickel, Total	591	684	48.0	-190. *	6.0
		Lead, Total	702	468	48.0	489.0*	1.0
		Antimony, Total	44.1	7.9	48.0	75.4	1.0
		Selenium, Total	169	0.36u	192	88.1	1.0
		Tin, Total	2160	361	96.1	1872	6.0
		Strontium, Total	158	59.8	96.1	102.3	6.0
		Titanium, Total	1010	783	96.1	235.2*	6.0
		Thallium, Total	183	0.53u	192	95.0	1.0
		Uranium, Total	669	168	480	104.4	1.0
		Vanadium, Total	82.4	30.4	48.0	108.3	1.0
		Zinc, Total	1650	1300	48.0	730.4*	6.0
		Zirconium, Total	5930	3000	480	610.5*	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J00FD1	Mercury, Total	6.8	6.5	0.15	175.0*	10.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00FB8	Silver, Total	16.0	19.6	20.2	6.0
		Aluminum, Total	17600	16400	6.7	1.0
		Arsenic, Total	4.9	3.7	27.9	1.0
		Boron, Total	46.3	33.3	32.7	6.0
		Barium, Total	603	715	17.0	6.0
		Beryllium, Total	0.02u	0.05	NC 200	1.0
		Calcium, Total	11900	10200	15.5 MW 1/27/03	1.0
		Cadmium, Total	3.0	2.3	26.4	1.0
		Cobalt, Total	13.5	14.3	5.8	1.0
		Chromium, Total	573	700	19.9	6.0
		Copper, Total	1600	778	69.4	6.0
		Iron, Total	44500	49100	9.8	6.0
		Potassium, Total	1030	1010	2.1	1.0
		Lithium, Total	50.1	27.7	57.6	6.0
		Magnesium, Total	2650	2950	10.6	1.0
		Manganese, Total	617	662	7.1	6.0
		Molybdenum, Total	23.4	19.2	19.7	1.0
		Sodium, Total	1000	597	50.9	1.0
		Nickel, Total	684	583	16.0	6.0
		Lead, Total	468	323	36.6	1.0
		Antimony, Total	7.9	7.1	10.7	1.0
		Selenium, Total	0.36u	0.37u	NC	1.0
		Tin, Total	361	336	7.2	6.0
		Strontium, Total	59.8	54.9	8.5	6.0
		Titanium, Total	783	867	10.2	6.0
		Thallium, Total	0.53u	0.55u	NC	1.0
		Uranium, Total	168	152	9.6	1.0
		Vanadium, Total	30.4	32.4	6.4	1.0
		Zinc, Total	1300	900	36.3	6.0
		Zirconium, Total	3000	1440	70.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J00FD1	Mercury, Total	6.5	7.2	10.4	10.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/23/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	03L0021-LC1	Silver, LCS	50.5	50.0	MG/KG	101.0
		Aluminum, LCS	499	500	MG/KG	99.9
		Arsenic, LCS	976	1000	MG/KG	97.6
		Boron, LCS	487	500	MG/KG	97.3
		Barium, LCS	500	500	MG/KG	100.0
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Calcium, LCS	2550	2500	MG/KG	102.1
		Cadmium, LCS	25.2	25.0	MG/KG	100.8
		Cobalt, LCS	254	250	MG/KG	101.8
		Chromium, LCS	51.5	50.0	MG/KG	103.0
		Copper, LCS	126	125	MG/KG	101.1
		Iron, LCS	506	500	MG/KG	101.1
		Potassium, LCS	2500	2500	MG/KG	100.1
		Lithium, LCS	512	500	MG/KG	102.5
		Magnesium, LCS	2480	2500	MG/KG	99.2
		Manganese, LCS	77.6	75.0	MG/KG	103.5
		Molybdenum, LCS	511	500	MG/KG	102.2
		Sodium, LCS	2410	2500	MG/KG	96.4
		Nickel, LCS	203	200	MG/KG	101.4
		Lead, LCS	252	250	MG/KG	100.6
		Antimony, LCS	297	300	MG/KG	99.1
		Selenium, LCS	955	1000	MG/KG	95.5
		Tin, LCS	504	500	MG/KG	100.8
		Strontium, LCS	500	500	MG/KG	100.0
		Titanium, LCS	502	500	MG/KG	100.4
		Thallium, LCS	1000	1000	MG/KG	100
		Uranium, LCS	-0.2	500	MG/KG	-0.03
		Vanadium, LCS	257	250	MG/KG	102.7
		Zinc, LCS	101	100	MG/KG	100.7
		Zirconium, LCS	1.1	500	MG/KG	0.22
LCS1	03C0006-LC1	Mercury, LCS	2.2	2.5	MG/KG	88.9

(b) VOA BNA metals DIG Nickel

Lionville Laboratory Use Only

0301L497

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY, INC.

Client TNU-Hanford B02-065

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del SD TAT 3 ~~7~~ days

Date Rec'd 1-15-03 Date Due 1-~~22~~-03 (18)

		A
Refrigerator #		5
#/Type Container	Liquid	
	Solid	1PL
Volume	Liquid	
	Solid	125
Preservatives		—

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: 0624H	0625H	MET①	INORG①
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	J00FB8			SO	1-3-03	1130	1	✓	✓	✓
	002	J00FD1			L	L	1142	1	✓	✓	✓

Special Instructions: SAF # B02-065

CAUTION: Possibly Spontaneous Combustable Samples

Limited Volume Received

Perform analyses in the following order:

① metals ② Anions ③ VOA ④ BNA

1-27-03 Add metals B, Li, Mo, Sn, Sr, Ti, U, Zr

DATE/REVISIONS:

MET① 1. As, Be, Pb, Se, Tl, Hg

INORG① 2. ICCl, ICFl, ICNO3, ICNO2, ICPO4, ICSO4,

3. ICNYO, ISFD, IPH

1-16-03 4. Change TAT = 3 day Add metals Al, Ag, Ba, Ca,

5. Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn

1-23-03 6. Cancel ISFD - ISV

Relinquished by	Received by	Date	Time
Yellow Freight	[signature]	1-15-03	1500

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were: 1) Shipped or Hand Delivered

Airbill # 447-053018

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

NOTES: NO3/NO2/PO4

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 20° °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-065-47	Page 1
Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code / Data Turnaround Air Quality ☐ ASAP
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-065	
Ice Chest No.	Field Logbook No. EL 1395-7	COA RG61852600	Method of Shipment Ground transportation, truck	
Shipped To TMA/RECRA	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	P	P	P	P							
No. of Container(s)	0	0	1	0							
Volume	125mL	125mL	125mL	125mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J00FB8	OTHER SOLID	1-3-03	1130	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
Doug Bowers Bowers 1-3-03/1130	300FF-1 RMSA 1-3-03/1130		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
300FF-1 RMSA 1-6-03/1000	Doug Bowers Bowers 1-6-03/1000		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
Doug Bowers Bowers 1-6-03/1030	Roadway (ground) 1-6-03/1030		
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		

SPECIAL INSTRUCTIONS

All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-48	Page 1

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
Doug Bowers	Jeff Lerch	373-5904	KESSNER, JH	Air Quality ☐	ASAP
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	**Sampling Location** 300-FF-1 618-5 Burial Ground		**SAF No.** B02-065		
Ice Chest No.	**Field Logbook No.** EL 1395-7	**COA** RG61852600	**Method of Shipment** Ground transportation, truck		
Shipped To TMA/RECRA	**Offsite Property No.**		**Bill of Lading/Air Bill No.**		

POSSIBLE SAMPLE HAZARDS/REMARKS

possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	P	P	P	G/P							
No. of Container(s)	0	0	1	0							
Volume	125mL	125mL	125mL	125g							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J00FD1	OTHER SOLID	1-3-03	1142	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
Doug Bowers Bowers 1-3-03/1230	300FF-1 RMSA 1-3-03-1230		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
300FF-1 RMSA 1-6-03/1000	Doug Bowers 1-6-03/1000		
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time		
Doug Bowers Bowers 1-6-03/1030	Roadway (ground) 1030		
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		

SPECIAL INSTRUCTIONS

All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

IENT: TNU-Hanford

chase Order/Project: B02-065 **DATE:** 1-15-03

F# / SOW# / Release #:

boratory SDG #: 0301L497

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

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No	☐ N/A	☐ see Comment # (1) (2)
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date) DT / 1-15-03	☑ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

(2) 20°C

(1) Received NO_3 NO_2 PO_4 Out of Hold

Laboratory Sample Custodian: J. M. Mahn

Laboratory Project Manager:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00FB8						
CHLORIDE BY IC	001	SO	03LICA03	01/03/03	01/16/03	01/16/03
CHLORIDE BY IC	001 REP	SO	03LICA03	01/03/03	01/16/03	01/16/03
CHLORIDE BY IC	001 MS	SO	03LICA03	01/03/03	01/16/03	01/16/03
FLUORIDE BY IC	001	SO	03LICA03	01/03/03	01/16/03	01/16/03
FLUORIDE BY IC	001 REP	SO	03LICA03	01/03/03	01/16/03	01/16/03
FLUORIDE BY IC	001 MS	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRITE BY IC	001	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRITE BY IC	001 REP	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRITE BY IC	001 MS	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRATE BY IC	001	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRATE BY IC	001 REP	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRATE BY IC	001 MS	SO	03LICA03	01/03/03	01/16/03	01/16/03
TOTAL CYANIDE	001	SO	03LCA01	01/03/03	01/17/03	01/17/03
TOTAL CYANIDE	001 REP	SO	03LCA01	01/03/03	01/17/03	01/17/03
PHOSPHATE BY IC	001	SO	03LICA03	01/03/03	01/16/03	01/16/03
PHOSPHATE BY IC	001 REP	SO	03LICA03	01/03/03	01/16/03	01/16/03
PHOSPHATE BY IC	001 MS	SO	03LICA03	01/03/03	01/16/03	01/16/03
SULFATE BY IC	001	SO	03LICA03	01/03/03	01/16/03	01/16/03
SULFATE BY IC	001 REP	SO	03LICA03	01/03/03	01/16/03	01/16/03
SULFATE BY IC	001 MS	SO	03LICA03	01/03/03	01/16/03	01/16/03
PH	001	SO	03LPH003	01/03/03	01/17/03	01/17/03
J00FD1						
CHLORIDE BY IC	002	SO	03LICA03	01/03/03	01/16/03	01/16/03
FLUORIDE BY IC	002	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRITE BY IC	002	SO	03LICA03	01/03/03	01/16/03	01/16/03
NITRATE BY IC	002	SO	03LICA03	01/03/03	01/16/03	01/16/03
TOTAL CYANIDE	002	SO	03LCA01	01/03/03	01/17/03	01/17/03
PHOSPHATE BY IC	002	SO	03LICA03	01/03/03	01/16/03	01/16/03
SULFATE BY IC	002	SO	03LICA03	01/03/03	01/16/03	01/16/03
PH	002	SO	03LPH003	01/03/03	01/17/03	01/17/03
LAB QC:						
CHLORIDE BY IC	MB1	S	03LICA03	N/A	01/16/03	01/16/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-065 H2043

DATE RECEIVED: 01/15/03 LVL LOT # :0301L497

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	S	03LICA03	N/A	01/16/03	01/16/03
FLUORIDE BY IC	MB1	S	03LICA03	N/A	01/16/03	01/16/03
FLUORIDE BY IC	MB1 BS	S	03LICA03	N/A	01/16/03	01/16/03
NITRITE BY IC	MB1	S	03LICA03	N/A	01/16/03	01/16/03
NITRITE BY IC	MB1 BS	S	03LICA03	N/A	01/16/03	01/16/03
NITRATE BY IC	MB1	S	03LICA03	N/A	01/16/03	01/16/03
NITRATE BY IC	MB1 BS	S	03LICA03	N/A	01/16/03	01/16/03
TOTAL CYANIDE	LCS L	S	03LCA01	N/A	01/17/03	01/17/03
TOTAL CYANIDE	LCS L	S	03LCA01	N/A	01/17/03	01/17/03
TOTAL CYANIDE	MB1	S	03LCA01	N/A	01/17/03	01/17/03
PHOSPHATE BY IC	MB1	S	03LICA03	N/A	01/16/03	01/16/03
PHOSPHATE BY IC	MB1 BS	S	03LICA03	N/A	01/16/03	01/16/03
SULFATE BY IC	MB1	S	03LICA03	N/A	01/16/03	01/16/03
SULFATE BY IC	MB1 BS	S	03LICA03	N/A	01/16/03	01/16/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-065 H2043
LVL#: 0301L497

W.O.#: 11343-606-001-99999-00
Date Received: 01-15-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 solid samples. Analysis for Sulfide was not performed as insufficient sample volume was available.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary. As minimal sample volume was submitted, the extracts prepared with 1 g sample and 20mL deionized water for anion analyses were also used to determine sample pH.

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

4. The results presented in this report are derived from samples that did not meet LvLI's sample acceptance policy as noted on the Sample Receipt Checklist.

5. The method blanks were within the method criteria.

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

7. The matrix spike (MS) recoveries for Chloride, Fluoride, Nitrite, Nitrate and Phosphate were within the 75-125% control limits, however MS recovery for Sulfate was above the control limit that may be attributed to sample inhomogeneity.

8. The replicate analyses for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide and Phosphate were within the 20% Relative Percent Difference (RPD) control limit, however replicate analysis for Sulfate was outside the control limit that may be attribute to sample inhomogeneity.

9. Results for solid samples are reported on a wet 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

01-27-03
Date

njp\i01-497

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 14 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

Other: Chloride, Fluoride, Nitrite, } **Method:** EPA 300.0

Other: Nitrate, Phosphate, Sulfate } **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
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 01/24/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00FB8	Chloride by IC	16.3	MG/KG	5.0	1.0
		Fluoride by IC	5.0 u	MG/KG	5.0	1.0
		Nitrite by IC	5.00 u	MG/KG	5.00	1.0
		Nitrate by IC	5.00 u	MG/KG	5.00	1.0
		Cyanide, Total	1.90 u	MG/KG	1.90	1.0
		Phosphate by IC	5.0 u	MG/KG	5.0	1.0
		Sulfate by IC	495	MG/KG	25.0	5.0
		pH	8.0	SOIL PH	0.01	1.0
-002	J00FD1	Chloride by IC	132	MG/KG	5.0	1.0
		Fluoride by IC	5.0 u	MG/KG	5.0	1.0
		Nitrite by IC	5.00 u	MG/KG	5.00	1.0
		Nitrate by IC	22.4	MG/KG	5.00	1.0
		Cyanide, Total	1.32 u	MG/KG	1.32	1.0
		Phosphate by IC	5.0 u	MG/KG	5.0	1.0
		Sulfate by IC	1910	MG/KG	100	20.0
		pH	7.8	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/24/03

CLIENT: TNUHANFORD B02-065 H2043

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

LVL LOT #: 0301L497

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LICA03-MB1	Chloride by IC	5.0 u	MG/KG	5.0	1.0
		Fluoride by IC	5.0 u	MG/KG	5.0	1.0
		Nitrite by IC	5.00 u	MG/KG	5.00	1.0
		Nitrate by IC	5.00 u	MG/KG	5.00	1.0
		Phosphate by IC	5.0 u	MG/KG	5.0	1.0
		Sulfate by IC	5.0 u	MG/KG	5.0	1.0
BLANK1	03LCA01-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/24/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00FB8	Chloride by IC	121	16.3	100	105.2	1.0
		Fluoride by IC	106	1.0	100	104.5	1.0
		Nitrite by IC	99.5	5.00u	100	99.5	1.0
		Nitrate by IC	104	5.00u	100	104.1	1.0
		Phosphate by IC	117	5.0 u	100	116.6	1.0
		Sulfate by IC	3520	495	2000	151.3	20.0
BLANK10	03LICA03-MB1	Chloride by IC	95.8	5.0 u	100	95.8	1.0
		Fluoride by IC	97.1	5.0 u	100	97.1	1.0
		Nitrite by IC	95.9	5.00u	100	95.9	1.0
		Nitrate by IC	92.2	5.00u	100	92.2	1.0
		Phosphate by IC	92.3	5.0 u	100	92.3	1.0
		Sulfate by IC	92.8	5.0 u	100	92.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/24/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00FB8	Chloride by IC	16.3	18.4	12.3	1.0
		Fluoride by IC	5.0 u	5.0 u	NC	1.0
		Nitrite by IC	5.00u	5.00u	NC	1.0
		Nitrate by IC	5.00u	5.00u	NC	1.0
		Cyanide, Total	1.90u	1.58u	NC	1.0
		Phosphate by IC	5.0 u	5.0 u	NC	1.0
		Sulfate by IC	495	1850	115.7	20.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/24/03

CLIENT: TNUHANFORD B02-065 H2043 LVL LOT #: 0301L497

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LCA01-LCS1	Cyanide, Total LCS	1.84	2.0	MG/KG	92.2
LCSS2	03LCA01-LCS2	Cyanide, Total LCS	10.0	10.0	MG/KG	100.0

Lionville Laboratory Use Only

03011L497

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B02-065

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 3 7 days

Date Rec'd: 1-15-03 Date Due: 1-22-03 (19)

Refrigerator #						5 (A)					
#/Type Container	Liquid										
	Solid					1 PL	———	———			
Volume	Liquid										
	Solid					125	———	———			
Preservatives						—					
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: 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 QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	MET①	INORG①
001	J00FB8			SO	1-3-03	1130	1	✓	✓	✓
002	J00FD1			⊥	⊥	1142	1	✓	✓	✓

(Lionville Laboratory Use Only)

Special Instructions: SAF # B02-065

CAUTION: Possibly Spontaneous Combustable Samples

Limited Volume Received

Perform analyses in the following order: ① metals ② Anion ③ VOA ④ BNA

DATE/REVISIONS:

MET① 1. As, Be, Pb, Se, Tl, Hg

INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

3. ICNYO, ISFD, IPH

1-16-03 4. Change TAT = 3 day Add metals Al, Ag, Ba, Ca,

5. Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn

1-23-03 6. Cancel ISFD - ISV

Lionville Laboratory Use Only

Samples were:
1) Shipped (circled) or Hand Delivered
Airbill # 447-053018
2) Ambient (circled) or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times Y or (N) — NO3/NO2/PO4 (1-24-03)

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

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

Cooler Temp. 20° °C

Relinquished by	Received by	Date	Time
Yellow Freight	[signature]	1-15-03	1500

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-47	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Doug Bowers	Jeff Lerch 373-5904	KESSNER, JH	Air Quality ☐ ASAP
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	**Sampling Location** 300-FF-1 618-5 Burial Ground	**SAF No.** B02-065	
Ice Chest No.	**Field Logbook No.** EL 1395-7 / **COA** RG61852600	**Method of Shipment** Ground transportation, truck	
Shipped To TMA/RECRA	**Offsite Property No.**	**Bill of Lading/Air Bill No.** —	

POSSIBLE SAMPLE HAZARDS/REMARKS
possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	P	P	P	P							
No. of Container(s)	0	0	1	0							
Volume	125mL	125mL	125mL	125mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time								
J00FB8	OTHER SOLID	1-3-03	1130	X	X	X	X				

CHAIN OF POSSESSION

Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time
Doug Bowers 1-3-03/1130	300FF-1 RMSA 1-3-03/1130
300FF-1 RMSA 1-6-03/1000	Doug Bowers 1-6-03/1000
Doug Bowers 1-6-03/1070	Roadway (ground) 1-6-03/1070

SPECIAL INSTRUCTIONS
All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-46

Collector Doug Bowers	**Company Contact** Jeff Lerch	**Telephone No.** 373-5904	**Project Coordinator** KESSNER, JH	**Price Code** / **Data Turnaround**
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	**Sampling Location** 300-FF-1 618-5 Burial Ground		**SAF No.** B02-065	**Air Quality** ☐ ASAP
Ice Chest No.	**Field Logbook No.** EL 1395-7	**COA** RG61852600	**Method of Shipment** Ground transportation, truck	
Shipped To TMA/RECRA	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS
possibly pyrophoric metal

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C								
Type of Container	P	P	P	G/P								
No. of Container(s)	0	0	1	0								
Volume	125mL	125mL	125mL	125g								
SAMPLE ANALYSIS	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.								
Sample No.	Matrix *	Sample Date	Sample Time									
J00FD1	OTHER SOLID	1-3-03	1142	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	1-3-03/1230	300FF-1 RMSA	1-3-03/1230
300FF-1 RMSA	1-6-03/1000	Doug Bowers	1-6-03/1000
Doug Bowers	1-6-03/1030	Roadway (ground)	1-6-03/1030

SPECIAL INSTRUCTIONS

All anlaysis to be taken from the one sample container, preform analysis in the following order if limited material condition exists. ICP metals, anions, Volatile organics, Semi-VOA's.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Total Cyanide - 9010; Sulfides - 9030; pH (Soil) - 9045

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

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

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

13

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: TNU-Hanford

rchase Order/Project: B02-065

DATE: 1-15-03

AF# / SOW# / Release #:

aboratory SDG #: 0301L497

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

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10.	Shipment meets LvL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes 1-24-03	☑ No 1-24-03	☐ N/A	☐ see Comment # ②
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date) DS / 1-15-03	☑ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

② 20°C

① Received NO_3 NO_2 PO_4 Out of Hold → HT non-applicable to solids

Laboratory Sample Custodian: J. M. Mahler

Laboratory Project Manager:

EBERLINE
SERVICES

January 23, 2003

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R3-01-040-7754, SDG H2043

Dear Ms. Kessner:

Enclosed is the data report for two other solid samples designated under SAF No. B02-065 received at Eberline Services on January 10, 2003. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

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

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2043 was composed of two other solid samples designated under SAF No. B02-065 with a Project Designation of: 618-5 Burial Ground – Anomalous Waste (Solids).

The samples were received at the laboratory under mineral oil. The sample material was suspected of being a pyrophoric metal.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 15, 16, and 17.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

BHI was notified that since the samples were received under mineral oil the data from the C-14 (Oxidation method) would be questionable. The C-14 would be more indicative of the mineral oil than the sample material. BHI directed the laboratory to go ahead with the analysis as requested on the chain-of-custody. No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.6 Gamma Spectroscopy Analyses

The LCS recoveries (Co-60 - 69% and Cs-137 - 65%) were low because the LCS was prepared inappropriately for the geometry the LCS was counted in. The efficiency applied to the LCS was probably off by 20 to 30%. The efficiency problem applied to the LCS data only and did not affect the client sample data. No other problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion — 1/23/03

Melissa C. Mannion
Program Manager

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2043

SDG	7754
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG_H2043

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

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	01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2043

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2043

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

SDG 7754
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2043

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J00FB9	300-FF-1 618-5 Burial Gr	SOLID		R301040-01	B02-065	B02-065-46	01/03/03 11:30
J00FD2	300-FF-1 618-5 Burial Gr	SOLID		R301040-02	B02-065	B02-065-49	01/03/03 11:42
Method Blank		SOLID		R301040-04	B02-065		
Lab Control Sample		SOLID		R301040-03	B02-065		
Duplicate (R301040-01)	300-FF-1 618-5 Burial Gr	SOLID		R301040-05	B02-065		01/03/03 11:30

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

QC SUMMARY

SDG 7754
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2043

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7754	B02-065-46	J00FB9	SOLID	100.0	8.10 g		01/10/03	7	R301040-01	7754-001
	B02-065-49	J00FD2	SOLID	100.0	22.12 g		01/10/03	7	R301040-02	7754-002
		Method Blank	SOLID						R301040-04	7754-004
		Lab Control Sample	SOLID						R301040-03	7754-003
		Duplicate (R301040-01)	SOLID	100.0	8.10 g		01/10/03	7	R301040-05	7754-005

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

PREP BATCH SUMMARY

SDG 7754
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2043

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
PU	SOLID	Plutonium, Isotopic in Solids	7032-162	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7032-162	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7032-162	10.0	2			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7032-162	20.0	2			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7032-162	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7032-162	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7032-162	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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

WORK SUMMARY

SDG 7754
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2043

CLIENT SAMPLE ID / LOCATION / CUSTODY	MATRIX / SAF No	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUFFIX	ANALYZED	REVIEWED	BY	METHOD
J00FB9		R301040-01	7754-001	93A/93		01/17/03	01/17/03	MCM	Gross Alpha in Soil
300-FF-1 618-5 Burial Gr	SOLID	01/03/03	7754-001	93B/93		01/17/03	01/17/03	MCM	Gross Beta in Soil
B02-065-46	B02-065	01/10/03	7754-001	C		01/16/03	01/17/03	MCM	Carbon 14 in Soil
			7754-001	GAM		01/16/03	01/17/03	MCM	Gamma Scan
			7754-001	PU		01/16/03	01/17/03	MCM	Plutonium, Isotopic in Solids
			7754-001	SR		01/16/03	01/17/03	MCM	Total Strontium in Soil
			7754-001	U		01/15/03	01/15/03	MCM	Uranium, Isotopic in Soil
J00FD2		R301040-02	7754-002	93A/93		01/17/03	01/17/03	MCM	Gross Alpha in Soil
300-FF-1 618-5 Burial Gr	SOLID	01/03/03	7754-002	93B/93		01/17/03	01/17/03	MCM	Gross Beta in Soil
B02-065-49	B02-065	01/10/03	7754-002	C		01/16/03	01/17/03	MCM	Carbon 14 in Soil
			7754-002	GAM		01/14/03	01/17/03	MCM	Gamma Scan
			7754-002	PU		01/16/03	01/17/03	MCM	Plutonium, Isotopic in Solids
			7754-002	SR		01/16/03	01/17/03	MCM	Total Strontium in Soil
			7754-002	U		01/15/03	01/15/03	MCM	Uranium, Isotopic in Soil
Method Blank		R301040-04	7754-004	93A/93		01/16/03	01/17/03	MCM	Gross Alpha in Soil
	SOLID		7754-004	93B/93		01/16/03	01/17/03	MCM	Gross Beta in Soil
	B02-065		7754-004	C		01/16/03	01/17/03	MCM	Carbon 14 in Soil
			7754-004	GAM		01/16/03	01/17/03	MCM	Gamma Scan
			7754-004	PU		01/16/03	01/17/03	MCM	Plutonium, Isotopic in Solids
			7754-004	SR		01/16/03	01/17/03	MCM	Total Strontium in Soil
			7754-004	U		01/15/03	01/15/03	MCM	Uranium, Isotopic in Soil
Lab Control Sample		R301040-03	7754-003	93A/93		01/16/03	01/17/03	MCM	Gross Alpha in Soil
	SOLID		7754-003	93B/93		01/16/03	01/17/03	MCM	Gross Beta in Soil
	B02-065		7754-003	C		01/16/03	01/17/03	MCM	Carbon 14 in Soil
			7754-003	GAM		01/14/03	01/17/03	MCM	Gamma Scan
			7754-003	PU		01/17/03	01/17/03	MCM	Plutonium, Isotopic in Solids
			7754-003	SR		01/16/03	01/17/03	MCM	Total Strontium in Soil
			7754-003	U		01/15/03	01/15/03	MCM	Uranium, Isotopic in Soil
Duplicate (R301040-01)		R301040-05	7754-005	93A/93		01/16/03	01/17/03	MCM	Gross Alpha in Soil
300-FF-1 618-5 Burial Gr	SOLID	01/03/03	7754-005	93B/93		01/16/03	01/17/03	MCM	Gross Beta in Soil
	B02-065	01/10/03	7754-005	C		01/16/03	01/17/03	MCM	Carbon 14 in Soil
			7754-005	GAM		01/17/03	01/17/03	MCM	Gamma Scan
			7754-005	PU		01/16/03	01/17/03	MCM	Plutonium, Isotopic in Solids
			7754-005	SR		01/16/03	01/17/03	MCM	Total Strontium in Soil
			7754-005	U		01/15/03	01/15/03	MCM	Uranium, Isotopic in Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

SDG 7754
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2043

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B02-065	Gross Alpha in Soil	900.0_ALPHABETA_GPC	2			1	1	1	5
93B/93	B02-065	Gross Beta in Soil	900.0_ALPHABETA_GPC	2			1	1	1	5
C	B02-065	Carbon 14 in Soil	C14_COX_LSC	2			1	1	1	5
GAM	B02-065	Gamma Scan	GAMMA_GS	2			1	1	1	5
PU	B02-065	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5
SR	B02-065	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
U	B02-065	Uranium, Isotopic in Soil	UISO_PLATE_AEA	2			1	1	1	5
TOTALS				14			7	7	7	35

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

R301040-04 Method Blank

METHOD BLANK

SDG 7754 Client/Case no Hanford SDG H2043
Contact Melissa C. Mannion Contract No. 630

Lab sample id R301040-04 Client sample id Method Blank
Dept sample id 7754-004 Material/Matrix SOLID
SAF No B02-065

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.988	1.3	3.1	10	U	93A
Gross Beta	12587-47-2	-1.13	3.9	6.8	15	U	93B
Carbon 14	14762-75-5	-1.80	17	28	50	U	C
Total Strontium	SR-RAD	0.363	1.9	4.0	1.0	U	SR
Uranium 233/234	U-233/234	-0.124	0.25	0.94	1.0	U	U
Uranium 235	15117-96-1	0	0.30	1.1	1.0	U	U
Uranium 238	U-238	0	0.25	0.94	1.0	U	U
Plutonium 238	13981-16-3	0.226	0.23	0.86	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.23	0.86	1.0	U	PU
Potassium 40	13966-00-2	U		7.7		U	GAM
Cobalt 60	10198-40-0	U		0.43	0.050	U	GAM
Barium 133	13981-41-4	U		0.33		U	GAM
Cesium 137	10045-97-3	U		0.41	0.10	U	GAM
Radium 226	13982-63-3	U		0.67		U	GAM
Radium 228	15262-20-1	U		1.5		U	GAM
Europium 152	14683-23-9	U		0.85	0.10	U	GAM
Europium 154	15585-10-1	U		1.2	0.10	U	GAM
Europium 155	14391-16-3	U		0.69	0.10	U	GAM
Thorium 228	14274-82-9	U		0.70		U	GAM
Thorium 232	TH-232	U		1.5		U	GAM
Uranium 235	15117-96-1	U		1.1		U	GAM
Uranium 238	U-238	U		42		U	GAM
Americium 241	14596-10-2	U		1.0		U	GAM

618-5 Burial Ground-Anomalous Waste

QC-BLANK 43598

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

R301040-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7754
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2043
Contract No. 630

Lab sample id R301040-03
Dept sample id 7754-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B02-065

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
Gross Alpha	193	15	2.8	10		93A	200	8.0	96	68-132	70-130
Gross Beta	215	11	5.4	15		93B	212	8.5	101	75-125	70-130
Carbon 14	17900	360	94	50		C	19500	780	92	85-115	80-120
Total Strontium	226	11	4.4	1.0		SR	212	8.5	107	81-119	80-120
Uranium 233/234	89.7	9.6	4.6	1.0		U	92.9	3.7	97	82-118	80-120
Uranium 235	67.4	8.1	1.3	1.0		U	75.5	3.0	89	82-118	80-120
Uranium 238	104	11	4.4	1.0		U	101	4.0	103	81-119	80-120
Plutonium 238	112	15	1.8	1.0		PU	122	4.9	92	79-121	80-120
Plutonium 239/240	122	16	1.8	1.0		PU	132	5.3	92	80-120	80-120
Cobalt 60	32.3	1.4	0.68	0.050		GAM	46.5	1.9	69	83-117	80-120
Cesium 137	30.7	1.1	0.73	0.10		GAM	46.9	1.9	65	84-116	80-120

618-5 Burial Ground-Anomalous Waste

QC-LCS 43597

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

R301040-05 J00FB9

DUPLICATE

SDG 7754 Client/Case no Hanford SDG H2043

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL		
Lab sample id R301040-05	Lab sample id R301040-01	Client sample id J00FB9		
Dept sample id 7754-005	Dept sample id 7754-001	Location/Matrix 300-FF-1 618-5 Burial Gr	SOLID	
	Received 01/10/03	Collected/Weight 01/03/03 11:30	8.10 g	
% solids 100.0	% solids 100.0	Custody/SAF No B02-065-46	B02-065	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	28.3	6.3	3.0	10		93A	33.8	6.6	3.5		18	61
Gross Beta	51.8	5.9	5.8	15		93B	55.4	6.8	7.7		7	41
Carbon 14	17.0	12	20	50	U	C	8.26	16	27	U	-	
Total Strontium	-0.204	2.0	4.2	1.0	U	SR	-1.22	1.7	4.0	U	-	
Uranium 233/234	25.0	4.4	1.3	1.0		U	31.0	4.3	1.1		21	35
Uranium 235	0.199	0.40	1.5	1.0	U	U	1.91	1.1	1.0		162	167
Uranium 238	24.5	4.4	1.3	1.0		U	25.5	3.8	0.86		4	36
Plutonium 238	0.240	0.48	0.92	1.0	U	PU	-0.116	0.23	0.89	U	-	
Plutonium 239/240	0	0.24	0.92	1.0	U	PU	0	0.23	0.89	U	-	
Potassium 40	U		38		U	GAM	U		23	U	-	
Cobalt 60	U		1.8	0.050	U	GAM	U		0.88	U	-	
Barium 133	U		1.4		U	GAM	U		0.76	U	-	
Cesium 137	U		1.7	0.10	U	GAM	U		0.89	U	-	
Radium 226	U		2.9		U	GAM	U		1.8	U	-	
Radium 228	U		6.6		U	GAM	U		3.7	U	-	
Europium 152	U		3.7	0.10	U	GAM	U		1.9	U	-	
Europium 154	U		5.0	0.10	U	GAM	U		2.4	U	-	
Europium 155	U		3.2	0.10	U	GAM	U		1.4	U	-	
Thorium 228	U		1.8		U	GAM	U		3.0	U	-	
Thorium 232	U		6.6		U	GAM	U		3.7	U	-	
Uranium 235	U		5.2		U	GAM	U		2.6	U	-	
Uranium 238	U		220		U	GAM	U		200	U	-	
Americium 241	U		3.5		U	GAM	U		0.72	U	-	

618-5 Burial Ground-Anomalous Waste

QC-DUP#1 43599

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/17/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2043

R301040-01 **J00FB9**

DATA SHEET

SDG	7754	Client/Case no	Hanford SDG_H2043
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R301040-01	Client sample id	J00FB9
Dept sample id	7754-001	Location/Matrix	300-FF-1 618-5 Burial Gr SOLID
Received	01/10/03	Collected/Weight	01/03/03 11:30 8.10 g
% solids	100.0	Custody/SAF No	B02-065-46 B02-065

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	33.8	6.6	3.5	10		93A
Gross Beta	12587-47-2	55.4	6.8	7.7	15		93B
Carbon 14	14762-75-5	8.26	16	27	50	U	C
Total Strontium	SR-RAD	-1.22	1.7	4.0	1.0	U	SR
Uranium 233/234	U-233/234	31.0	4.3	1.1	1.0		U
Uranium 235	15117-96-1	1.91	1.1	1.0	1.0		U
Uranium 238	U-238	25.5	3.8	0.86	1.0		U
Plutonium 238	13981-16-3	-0.116	0.23	0.89	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.23	0.89	1.0	U	PU
Potassium 40	13966-00-2	U		23		U	GAM
Cobalt 60	10198-40-0	U		0.88	0.050	U	GAM
Barium 133	13981-41-4	U		0.76		U	GAM
Cesium 137	10045-97-3	U		0.89	0.10	U	GAM
Radium 226	13982-63-3	U		1.8		U	GAM
Radium 228	15262-20-1	U		3.7		U	GAM
Europium 152	14683-23-9	U		1.9	0.10	U	GAM
Europium 154	15585-10-1	U		2.4	0.10	U	GAM
Europium 155	14391-16-3	U		1.4	0.10	U	GAM
Thorium 228	14274-82-9	U		3.0		U	GAM
Thorium 232	TH-232	U		3.7		U	GAM
Uranium 235	15117-96-1	U		2.6		U	GAM
Uranium 238	U-238	U		200		U	GAM
Americium 241	14596-10-2	U		0.72		U	GAM

618-5 Burial Ground-Anomalous Waste

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/17/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2043

R301040-02 **J00FD2**

DATA SHEET

SDG	7754	Client/Case no	Hanford SDG H2043
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R301040-02	Client sample id	J00FD2
Dept sample id	7754-002	Location/Matrix	300-FF-1 618-5 Burial Gr SOLID
Received	01/10/03	Collected/Weight	01/03/03 11:42 22.12 g
% solids	100.0	Custody/SAF No	B02-065-49 B02-065

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	25.2	6.3	4.8	10		93A
Gross Beta	12587-47-2	38.3	6.0	7.1	15		93B
Carbon 14	14762-75-5	11.0	15	26	50	U	C
Total Strontium	SR-RAD	5.40	2.7	4.3	1.0		SR
Uranium 233/234	U-233/234	12.9	2.6	0.93	1.0		U
Uranium 235	15117-96-1	1.03	0.88	1.1	1.0	U	U
Uranium 238	U-238	15.8	2.9	0.93	1.0		U
Plutonium 238	13981-16-3	0.273	0.27	1.0	1.0	U	PU
Plutonium 239/240	PU-239/240	0.682	0.55	1.0	1.0	U	PU
Potassium 40	13966-00-2	U		27		U	GAM
Cobalt 60	10198-40-0	U		1.1	0.050	U	GAM
Barium 133	13981-41-4	U		0.91		U	GAM
Cesium 137	10045-97-3	U		1.0	0.10	U	GAM
Radium 226	13982-63-3	U		2.0		U	GAM
Radium 228	15262-20-1	U		4.5		U	GAM
Europium 152	14683-23-9	U		2.2	0.10	U	GAM
Europium 154	15585-10-1	U		2.7	0.10	U	GAM
Europium 155	14391-16-3	U		1.6	0.10	U	GAM
Thorium 228	14274-82-9	U		1.2		U	GAM
Thorium 232	TH-232	U		4.5		U	GAM
Uranium 235	15117-96-1	U		3.9		U	GAM
Uranium 238	U-238	U		120		U	GAM
Americium 241	14596-10-2	U		0.82		U	GAM

618-5 Burial Ground-Anomalous Waste

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test PU Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7032-162								
J00FB9	R301040-01			7754-001	U		U	
J00FD2	R301040-02			7754-002	U		U	
BLK (QC ID=43598)	R301040-04			7754-004	U		U	
LCS (QC ID=43597)	R301040-03			7754-003	ok		ok	
Duplicate (R301040-01)	R301040-05			7754-005	-	U	-	U
Nominal values and limits from method 618-5 Burial Ground-Anomalous Waste				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162 2σ prep error 5.0 % Reference Lab Notebook 7024 pg. 162																
J00FB9	R301040-01			0.89	0.100			73		182			13	01/16/03	01/16	SS-011
J00FD2	R301040-02			1.0	0.100			60		183			13	01/16/03	01/16	SS-016
BLK (QC ID=43598)	R301040-04			0.86	0.100			73		184				01/16/03	01/16	SS-051
LCS (QC ID=43597)	R301040-03			1.8	0.100			61		107				01/16/03	01/17	SS-051
Duplicate (R301040-01) (QC ID=43599)	R301040-05			0.92	0.100			64		185			13	01/16/03	01/16	SS-052
Nominal values and limits from method				1.0	0.100			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES			
	MDA	1.1	± 0.80
	YIELD	66	± 13

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test U Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7032-162														
J00FB9	R301040-01			7754-001	31.0		1.91		25.5		122	25	7	4
J00FD2	R301040-02			7754-002	12.9		1.03	U	15.8		82	22	7	6
BLK (QC ID=43598)	R301040-04			7754-004	U		U		U					
LCS (QC ID=43597)	R301040-03			7754-003	ok		ok		ok					
Duplicate (R301040-01)	R301040-05			7754-005	ok		ok	U	ok		102	26	1	2
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0		1.0		100		4	
618-5 Burial Ground-Anomalous Waste										Averages	102		5	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162 2σ prep error 5.0 % Reference Lab Notebook 7024 pg. 162																
J00FB9	R301040-01			1.1	0.100			108		129			12	01/15/03	01/15	SS-053
J00FD2	R301040-02			1.1	0.100			91		128			12	01/15/03	01/15	SS-055
BLK (QC ID=43598)	R301040-04			1.1	0.100			97		128				01/15/03	01/15	SS-057
LCS (QC ID=43597)	R301040-03			4.6	0.100			79		128				01/15/03	01/15	SS-056
Duplicate (R301040-01) (QC ID=43599)	R301040-05			1.5	0.100			72		128			12	01/15/03	01/15	SS-058
Nominal values and limits from method				1.0	0.100			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 4
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 1.9 ± 3.1
YIELD 89 ± 29

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test SR Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7032-162					
J00FB9	R301040-01			7754-001	U
J00FD2	R301040-02			7754-002	5.40
BLK (QC ID=43598)	R301040-04			7754-004	U
LCS (QC ID=43597)	R301040-03			7754-003	ok
Duplicate (R301040-01)	R301040-05			7754-005	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
618-5 Burial Ground-Anomalous Waste					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162	2σ prep error 10.0 %			Reference Lab Notebook 7024 pg. 162												
J00FB9	R301040-01			4.0	0.100			87		100			13	01/16/03	01/16	GRB-218
J00FD2	R301040-02			4.3	0.100			84		100			13	01/16/03	01/16	GRB-219
BLK (QC ID=43598)	R301040-04			4.0	0.100			88		100				01/16/03	01/16	GRB-222
LCS (QC ID=43597)	R301040-03			4.4	0.100			83		100				01/16/03	01/16	GRB-221
Duplicate (R301040-01) (QC ID=43599)	R301040-05			4.2	0.100			84		100			13	01/16/03	01/16	GRB-224
Nominal values and limits from method				1.0	0.100			30-105		100			180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 2
CP-502 Strontium in Solids, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 4.2 ± 0.36
YIELD 85 ± 4

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test 93A Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7032-162					
J00FB9	R301040-01	93		7754-001	33.8
J00FD2	R301040-02	93		7754-002	25.2
BLK (QC ID=43598)	R301040-04	93		7754-004	U
LCS (QC ID=43597)	R301040-03	93		7754-003	ok
Duplicate (R301040-01)	R301040-05	93		7754-005	ok
Nominal values and limits from method				RDLs (pCi/g)	10
618-5 Burial Ground-Anomalous Waste					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162	2σ prep error 20.0 %	Reference Lab Notebook 7024 pg. 162														
J00FB9	R301040-01	93		3.5	0.100			38	100				14	01/15/03	01/17	GRB-114
J00FD2	R301040-02	93		4.8	0.100			51	100				14	01/15/03	01/17	GRB-115
BLK (QC ID=43598)	R301040-04	93		3.1	0.100			22	100					01/15/03	01/16	GRB-110
LCS (QC ID=43597)	R301040-03	93		2.8	0.100			22	100					01/15/03	01/16	GRB-109
Duplicate (R301040-01) (QC ID=43599)	R301040-05	93		3.0	0.100			38	100				13	01/15/03	01/16	GRB-111
Nominal values and limits from method				10	0.100			5-250	100				180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.4 ± 1.6
RESIDUE 34 ± 25

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test 93B Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 7032-162					
J00FB9	R301040-01	93		7754-001	55.4
J00FD2	R301040-02	93		7754-002	38.3
BLK (QC ID=43598)	R301040-04	93		7754-004	U
LCS (QC ID=43597)	R301040-03	93		7754-003	ok
Duplicate (R301040-01)	R301040-05	93		7754-005	ok
Nominal values and limits from method				RDLs (pCi/g)	15
618-5 Burial Ground-Anomalous Waste					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162	2σ prep error 15.0 %	Reference Lab Notebook 7024 pg. 162														
J00FB9	R301040-01	93		7.7	0.100			38		100			14	01/15/03	01/17	GRB-114
J00FD2	R301040-02	93		7.1	0.100			51		100			14	01/15/03	01/17	GRB-115
BLK (QC ID=43598)	R301040-04	93		6.8	0.100			22		100				01/15/03	01/16	GRB-110
LCS (QC ID=43597)	R301040-03	93		5.4	0.100			22		100				01/15/03	01/16	GRB-109
Duplicate (R301040-01) (QC ID=43599)	R301040-05	93		5.8	0.100			38		100			13	01/15/03	01/16	GRB-111
Nominal values and limits from method				15	0.100			5-250		100			180			

PROCEDURES
REFERENCE 900.0_ALPHABETA_GPC
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 2
CP-125 Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 6.6 ± 1.9
RESIDUE 34 ± 25

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test GAM Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7032-162						
J00FB9	R301040-01			7754-001	U	U
J00FD2	R301040-02			7754-002	U	U
BLK (QC ID=43588)	R301040-04			7754-004	U	U
LCS (QC ID=43587)	R301040-03			7754-003	LOW	LOW
Duplicate (R301040-01)	R301040-05			7754-005	- U	- U
Nominal values and limits from method 618-5 Burial Ground-Anomalous Waste				RDLs (pCi/g)	0.050	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 162																
J00FB9	R301040-01			6.2	5.08					952			13	01/14/03	01/16	LC,07,00
J00FD2	R301040-02			7.6	4.99					714			11	01/14/03	01/14	LC,07,00
BLK (QC ID=43588)	R301040-04			3.0	4.99					722				01/14/03	01/16	CP,03,00
LCS (QC ID=43587)	R301040-03			0.68	4.99					714				01/14/03	01/14	CP,03,00
Duplicate (R301040-01) (QC ID=43589)	R301040-05			13	5.08					226			14	01/14/03	01/17	LC,03,00
Nominal values and limits from method				0.050	4.99					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 6.1 ± 9.4
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

Test C Matrix SOLID
SDG 7754
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2043

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7032-162						
J00FB9	R301040-01			7754-001	U	
J00FD2	R301040-02			7754-002	U	
BLK (QC ID=43598)	R301040-04			7754-004	U	
LCS (QC ID=43597)	R301040-03			7754-003	ok	
Duplicate (R301040-01)	R301040-05			7754-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	50	
618-5 Burial Ground-Anomalous Waste						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-162	2σ prep error 10.0 %			Reference Lab Notebook 7024 pg. 162												
J00FB9	R301040-01			27	0.0328			100		100			13	01/15/03	01/16	LSC-004
J00FD2	R301040-02			26	0.0355			100		100			13	01/15/03	01/16	LSC-004
BLK (QC ID=43598)	R301040-04			28	0.0328			100		100				01/15/03	01/16	LSC-004
LCS (QC ID=43597)	R301040-03			94	0.0328			100		10				01/15/03	01/16	LSC-004
Duplicate (R301040-01) (QC ID=43599)	R301040-05			20	0.0464			100		100			13	01/15/03	01/16	LSC-004
Nominal values and limits from method				50	0.0328					50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 39 ± 62
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2043

SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2043

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2043

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

EBERLINE SERVICES/RICHMOND

SDG 7754
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H2043

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2043

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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Version Ver 1.0
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SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2043

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2043

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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SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2043

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2043

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
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2043

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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Protocol Hanford
Version Ver 1.0
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SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2043

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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REPORT GUIDE

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Contract No. 630
Case no SDG_H2043

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

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

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

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

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

  2. The error of ADDED.

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

* The second limits are protocol defined upper and lower QC limits

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2043

MATRIX SPIKE

for the recovery.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2043

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2043

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

SDG 7754
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2043

METHOD SUMMARY

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

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/17/03

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-46	Page 1 of 1
Collector: Doug Bowers	Company Contact: Jeff Lerch; Telephone No.: 373-5904	Project Coordinator: KESSNER, JH	Price Code; Data Turnaround: ASAP
Project Designation: 618-5 Burial Ground - Anomalous Waste (Solids)	Sampling Location: 300-FF-1 618-5 Burial Ground H2043 (7754)	SAF No.: B02-065	Air Quality ☐
Ice Chest No.: SIN09/9804008	Field Logbook No.: EL 1395-7; COA: RG61852600	Method of Shipment: Ground transportation, truck	
Shipped To: TMA/RECRA	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

possibly pyrophoric metal

Special Handling and/or Storage

Inert in mineral oil.

Preservation	None	None										
Type of Container	P	P										
No. of Container(s)	0	1										
Volume	125mL	125mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions	RCF GEA Shipping Screen	RCF									
Sample No.	Matrix *	Sample Date	Sample Time									
J00FB9	OTHER SOLID	1-3-03	1120	X	X	10956	893					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	1-3-03/1120	David St. John	01/03/03 1230
David St. John	01/03/03/1345	CW Landers	1-3-03/1345
CW Landers	1-6-03/0950	David St. John	1/6/03 0950
David St. John	1/6/03 1030	Roadway Ground	1/6/03 1030
		Ken	1-10-03 1041

SPECIAL INSTRUCTIONS

This sample will be shipped to RCF for shipping screen then re-routed to TMA for rad analysis.

(1) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Uranium; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Carbon-14

84 grams of mineral oil added, tare wt. on bottle 22 grams

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-065-49	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Doug Bowers	Jeff Lerch 373-5904	KESSNER, JH	Air Quality ☐ ASAP
Project Designation 618-5 Burial Ground - Anomalous Waste (Solids)	**Sampling Location** 300-FF-1 618-5 Burial Ground H2043 (7754	**SAF No.** B02-065	
Ice Chest No. SIN09/9804008	**Field Logbook No.** EL 1395-7 / **COA** RG61852600	**Method of Shipment** Ground transportation, truck	
Shipped To TMA/RECRA	**Offsite Property No.** N/A	**Bill of Lading/Air Bill No.** N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS
possibly pyrophoric metal

Special Handling and/or Storage
Inert in mineral oil.

Preservation	None	None									
Type of Container	P	P									
No. of Container(s)	0	1									
Volume	125mL	125mL									

SAMPLE ANALYSIS

				See item (1) in Special Instructions.	RCF GEA Shipping Screen	RCF							
Sample No.	Matrix *	Sample Date	Sample Time										
J00FD2	OTHER SOLID	1-3-03	1142	X	X	10757	8Hg						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	1-3-03/1230	David St. John David St. John	01/03/03 1230
David St. John	01/03/03 1345	CW Landes CW Landes	1-7-03/1345
CW Landes CW Landes	1-6-03/0950	David St. John David St. John	1/6/03 0950
		Lisa Ch	1-10-03 1000

SPECIAL INSTRUCTIONS
This sample will be shipped to RCF for shipping screen then re-routed to TMA for rad analysis.

(1) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Uranium; Isotopic Plutonium; Strontium-89,90 – Total Sr; Carbon-14

58 grams of mineral oil added, tare wt. on bottle 22 grams.

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

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

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

EBERLINE SERVICES **ANALYTICAL SERVICES GROUP**

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BHI Date/Time received 1000 1-10-03

CoC No. B02-065-46

Container I.D. No. 00007573 Requested TAT (Days) ASAP P.O. Received Yes [ ] No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [✓]	
6.	Number of samples in shipping container: 2			
7.	Number of containers per sample: 1 (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.	Describe any anomalies:			
13.	Was P.M. notified of any anomalies? Yes [ ] No [ ] Date			
14.	Received by Vera C Date: 1-10-03 Time: 1000			

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 _____

Survey Meter Ser. No. _____ Calibration date _____