0059172

SAF-B03-006
117-DR Liquid Sampling to Support ETF
Analytical Data Requirements
FINAL DATA PACKAGE

FAX RESULTS TO:

Rikki Thoren 372-2183 ___N/A___
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Rikki Thoren _____N/A_____
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Rikki Thoren X9-05 bdai 1/16/03
INTIAL/DATE

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

SDG (H2005)__ SAF-B03-006

Rad only Chem only X Rad & Chem

X Complete Partial

RECEIVED
APR 2 8 2003
EDMC

LIONVILLE LABORATORY INC.

27 December 2002

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 #	0212L279
SDG #	H2005
SAF #	B03-006
Date Received	12-03-02
# Samples	1
Matrix	Other Liquid
Volatiles	X
Semivolatiles	X
Pest/PCB	X
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

RECEIVED
DEC 2002

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

RECEIVED
DEC 2002

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B03-006 H2005

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J009L0	001	W	02LVG472	11/20/02	N/A	12/04/02
J009L0	001 MS	W	02LVG472	11/20/02	N/A	12/04/02
J009L0	001 MSD	W	02LVG472	11/20/02	N/A	12/04/02

LAB QC:

VBLKZB	MB1	W	02LVG472	N/A	N/A	12/04/02
VBLKZB	MB1 BS	W	02LVG472	N/A	N/A	12/04/02

12-05-02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B03-006
LVL #: 0212L279
SDG/SAF # H2005/B03-006

W.O. #: 11343-606-001-9999-00
Date Received: 12-03-2002

GC/MS VOLATILE

One (1) water sample was collected on 11-20-2002.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL volatile target compounds on 12-04-2002.

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

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-11).

2. The required holding time for analysis was met.

3. Non-target compounds were not detected in the sample.

4. All surrogate recoveries were within EPA QC limits.

5. All matrix spike recoveries were within EPA QC limits.

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

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

8. The pH of the sample exceeded 2.0, indicating that it may not have been properly preserved.

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

12-11-02
Date

som\group\data\voa\tnu-hanford\0212-279.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 1 pages.

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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: 12/04/02 16:33

RFW Batch Number: 0212L279 Client: TNU-HANFORD B03-006,H2005 Work Order: 11343606001 Page: 1a

	Cust ID:	J009L0		J009L0		J009L0		VBLKZB		VBLKZB BS	
Sample Information	RFW#:	001		001 MS		001 MSD		02LVG472-MB1		02LVG472-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	97	%	92	%	93	%	95	%	93	%
	Bromofluorobenzene	86	%	86	%	85	%	84	%	83	%
	1,2-Dichloroethane-d4	96	%	96	%	96	%	94	%	96	%
Chloromethane		10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U
Methylene Chloride		5	U	5	U	5	U	5	U	5	U
Acetone		16		19		16		10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	85	%	85	%	5	U	83	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U
2-Butanone		5	J	6	J	6	J	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	109	%	106	%	5	U	104	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U
Benzene		5	U	97	%	95	%	5	U	93	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		2	J	2	J	2	J	10	U	10	U
2-Hexanone		1	J	1	J	1	J	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U
Toluene		5	U	100	%	98	%	5	U	95	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0212L279 Client: TNU-HANFORD B03-006 Work Order: 11343606001 Page: 1b

Cust ID:	J009L0	J009L0	J009L0	VBLKZB	VBLKZB BS
RFW#:	001	001 MS	001 MSD	02LVG472-MB1	02LVG472-MB1
Chlorobenzene	5 U	100 %	97 %	5 U	96 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

(6) VOA BNA PPCB (MET) VOA

Lionville Laboratory Use Only

02/2C 279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF# B03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 3 days

Date Rec'd: 12-3-02 Date Due: 12-6-02

		A-C	DE	F	G	H	I	J	K	L	M	N	O	P	Q
Refrigerator #		1	5	5					5	1				1	5
#/Type Container	Liquid	3AG	2AG	4AG					1PL	1PL	1PL	1PL	1PL	1PL	1PL
	Solid														
Volume	Liquid	40	L	L					500	500	500	500	500	500	250
	Solid														
Preservatives		HCL	—	—					HNO3	NaOH	—	NaOH/ZnAc	—	HCL	—	—
ANALYSES REQUESTED		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb			Metal	CN	IC Anions	Sulfide	TSS TDS	TOC	Cond.	Alk/Acid

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB					MET	ICNO	IC	IEPH	ISFD	ITSS	ITDS	IOCT	ISFD	IIGN
001	J009L0	X	X	W	11/04/02	1140	3	2	4					1	1	1	1	1	1	1	1	1	1

Special Instructions:

v SAMPLES = High Basic

Unpreserved

SAF B03-006

DATE/REVISIONS:

MET 1. As, Ba, Cd, Cr, Pb, Se, Ag, Li, Na, Hg

IC 1 2. ICBR, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

12-5-02 3. Change 0625H to 0625X

4.

5.

6.

Lionville Laboratory Use Only

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

2) Ambient or Chilled

3) Received In Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	11/3/02	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

7906 4360 4281

pH NO3 NO2 PO4

02/2L011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 1 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: ~~21~~ Days 3 WK 12-3-2		
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	Air Quality ☐
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS: Radioactive

Tie To J009L1

Special Handling and/or Storage: Cool 4°C

Preservation	HNO3 to pH <2	None	None	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	ZnAc+NaOH to pH >9 Cool	Cool 4C	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cooled to 4C
Type of Container	P	P	P	P	P	P	P	P	aG	aG
No. of Container(s)	5	1	1	1	1	1	1	1	1	4
Volume	1000mL	125mL	125mL	500mL J	500mL L	500mL M	500mL K	500mL N	500mL O	1000mL ~~G~~ ~~H~~
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Tritium - 1H3	Carbon-14	See item (2) in Special Instructions.	Total Cyanide - 9010	Sulfides - 9030	See item (3) in Special Instructions.	TSS - 160.2; TDS - 160.1	TOC - 415.1	PCBs - 8082 FGHI

12-2-02

Sample No.	Matrix *	Sample Date	Sample Time										
J009L0	WATER	11-20-02	1140	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: SSGALE	112002 1550	REF 1A	112002 1550
Relinquished By/Removed From: 1A 3728	12-2-02 1000	Received By/Stored In:	12-2-02 1000
Relinquished By/Removed From:	12-2-02 1000	Received By/Stored In:	
Relinquished By/Removed From:	12-3-02 0950	Received By/Stored In:	12-3-02 0950
Relinquished By/Removed From:		Received By/Stored In:	
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.

** The laboratory is to analyze pH within 24 hours of sample receipt.

(1) Americium-241; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-228, Thorium-232}; Isotopic Uranium

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Lithium, Sodium}; Mercury - 7470 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040

Personnel not available to relinquish samples from the 3728 Ref # 117 on 12 12 02

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 2 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J009L1

Special Handling and/or Storage
Cool 4°C

Preservation	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cool 4C	None						
Type of Container	aG	aGs*	G/P	aG						
No. of Container(s)	2	3	1	1						
Volume	1000mL	40mL	500mL	250mL						
	~~AB~~ DE	ABC	P	P						
SAMPLE ANALYSIS	Semi-VOA - 8270A (ETF)	VOA - 8260A (ETF)	Conductivity - 120.1	Ignitability - 1010						

Sample No.	Matrix *	Sample Date	Sample Time										
J009L0	WATER	11-20-02	1140	X	X	X	X						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: SIGALE/Jeff	112002 1550	Received By/Stored In: REF 1A	112002 1550
Relinquished By/Removed From: 1A 3728	12.2.02 1000	Received By/Stored In: R.F. Fahlberg	12.2.02 1000
Relinquished By/Removed From: ERC R.F. Fahlberg	12.2.02 1000	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	12-3-02 0950	Received By/Stored In: [illegible]	12-3-02 0950
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.
** The laboratory is to analyze pH within 24 hours of sample receipt.

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12/2/02

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: HANFORD

rchase Order/Project: MA

DATE: 12/3/02

AF# / SOW# / Release #: B03-006

aboratory SDG #: 0212L279

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 LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes JM 12/3/02	☑ 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)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

2C-96-001 3°

Samples are High Base

(1) Received pH, NO3, NO2, PO4 Out of Hold

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

11

RECEIVED
DEC 2002

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B03-006 H2005

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J009L0	001	W	02LE1453	11/20/02	12/03/02	12/05/02
J009L0	001 MS	W	02LE1453	11/20/02	12/03/02	12/05/02
J009L0	001 MSD	W	02LE1453	11/20/02	12/03/02	12/05/02
LAB QC:						
SBLKJL	MB1	W	02LE1453	N/A	12/03/02	12/05/02
SBLKJL	MB1 BS	W	02LE1453	N/A	12/03/02	12/05/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B03-006
LVL #: 0212L279
SDG/SAF # H2005/B03-006

W.O. #: 11343-606-001-9999-00
Date Received: 12-03-2002

SEMIVOLATILE

One (1) water sample was collected on 11-20-2002.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3520 on 12-03-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 12-05-2002.

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

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-13).

2. The sample was received outside of extraction holding time; however, it was extracted on the same day it was received.

3. One (1) of thirty (30) surrogate recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).

4. All matrix spike recoveries were within EPA QC limits.

   Three (3) of eleven (11) blank spike recoveries were outside EPA QC limits.

   Not all target compounds were included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.) A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

6. 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").

7. 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 _____ 12-12-02
J. Michael Taylor — Date
President
Lionville Laboratory Incorporated

som\gorup\data\bna\tnu-hanford-0212-279.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 3 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 02MS245

Initiator: M. Kobel
Date: 12/6/02
Client: TNU

Batch: 02I2L279
Samples: BS
Method: SW846/MCAWW/CLP/

Parameter: 0625X
Matrix: water
Prep Batch: 02LE1453

1. Reason for SDR

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

b. General Discrepancy

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

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

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

the following spikes were low in the BS, ok in MS and MSD.
① N-nitroso-di-n-propylamine @ 6%
② acenaphthene @ 38%
③ pyrene @ 17%

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

narrate

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

4. Project Manager Instructions...signature/date: 12/6/02

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

5. Final Action...signature/date: 12/10/02 Other Explanation:

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

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

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

GLOSSARY OF 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, Special List

Report Date: 12/10/02 15:00

RFW Batch Number: 0212L279 Client: TNUHANFORD B03-006 H2005 Work Order: 11343606001 Page: 1a

	Cust ID:	J009L0		J009L0		J009L0		SBLKJL		SBLKJL BS	
Sample Information	RFW#:	001		001 MS		001 MSD		02LE1453-MB1		02LE1453-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Phenol-d5	61	%	63	%	56	%	67	%	65	%
	2-Fluorophenol	52	%	59	%	53	%	69	%	69	%
	2,4,6-Tribromophenol	76	%	97	%	85	%	65	%	69	%
	Nitrobenzene-d5	54	%	58	%	52	%	48	%	57	%
	2-Fluorobiphenyl	56	%	62	%	55	%	53	%	56	%
	p-Terphenyl-d14	56	%	57	%	33	%	39	%	24 *	%
1,4-Dichlorobenzene		11	U	56	%	51	%	10	U	56	%
Benzyl alcohol		11	U	12	U	11	U	10	U	10	U
3 and/or 4-Methylphenol		4	J	5	J	4	J	10	U	10	U
2-Methylphenol		11	U	12	U	11	U	10	U	10	U
Naphthalene		11	U	12	U	11	U	10	U	10	U
Hexachloroethane		11	U	12	U	11	U	10	U	10	U
Di-n-Octyl phthalate		11	U	12	U	11	U	10	U	10	U
N-Nitrosodimethylamine		11	U	12	U	11	U	10	U	10	U
Acetophenone		11	U	12	U	11	U	10	U	10	U
Tributylphosphate		2	J	2	J	2	J	10	U	10	U

*= Outside of EPA CLP QC limits.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: TNU-HANFORD B03-006 RFW Lot No.: 0212L279-001

MATRIX Spike - Sample No.: J009L0 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	MS CONCENTRATION UG/L	MS % REC #	QC LIMITS REC
Phenol	86.2	0	52.5	61	12 -110
2-Chlorophenol	86.2	0	54.8	64	27 -123
1,4-Dichlorobenzene	57.5	0	32.0	56	36 - 97
N-Nitroso-Di-n-propylamine	57.5	0	39.8	69	41 -116
1,2,4-Trichlorobenzene	57.5	0	31.2	54	39 - 98
4-Chloro-3-methylphenol	86.2	0	67.9	79	23 - 97
Acenaphthene	57.5	0	39.2	68	46 -118
4-Nitrophenol	86.2	0	61.6	71	10 - 80
2,4-Dinitrotoluene	57.5	0	41.2	72	24 - 96
Pentachlorophenol	86.2	0	71.0	82	9 -103
Pyrene	57.5	0	36.5	64	26 -127

COMPOUND	SPIKE ADDED UG/L	MSD CONCENTRATION UG/L	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	81.4	44.2	54	12	42	12 -110
2-Chlorophenol	81.4	46.2	57	11	40	27 -123
1,4-Dichlorobenzene	54.3	27.8	51	9	28	36 - 97
N-Nitroso-Di-n-propylamine	54.3	31.9	59	15	38	41 -116
1,2,4-Trichlorobenzene	54.3	26.4	49	9	28	39 - 98
4-Chloro-3-methylphenol	81.4	59.2	73	7	42	23 - 97
Acenaphthene	54.3	34.4	63	7	31	46 -118
4-Nitrophenol	81.4	51.8	64	10	50	10 - 80
2,4-Dinitrotoluene	54.3	44.7	82	12	38	24 - 96
Pentachlorophenol	81.4	66.3	81	1	50	9 -103
Pyrene	54.3	31.7	58	9	31	26 -127

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

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS:

3C

WATER SEMIVOLATILE BLANK SPIKE RECOVERY

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

Case No.: TNU-HANFORD B03-006 RFW Lot No.: 0212L279

BLANK Spike - Sample No.: SBLKJLLE1453-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	BS CONCENTRATION UG/L	BS % REC #	QC LIMITS REC
Phenol	75.0	0	45.0	60	12 -110
2-Chlorophenol	75.0	0	51.8	69	27 -123
1,4-Dichlorobenzene	50.0	0	28.0	56	36 - 97
N-Nitroso-Di-n-propylamine	50.0	0	2.90	6 *	41 -116
1,2,4-Trichlorobenzene	50.0	0	26.7	53	39 - 98
4-Chloro-3-methylphenol	75.0	0	47.1	63	23 - 97
Acenaphthene	50.0	0	19.0	38 *	46 -118
4-Nitrophenol	75.0	0	52.8	70	10 - 80
2,4-Dinitrotoluene	50.0	0	16.0	32	24 - 96
Pentachlorophenol	75.0	0	42.5	57	9 -103
Pyrene	50.0	0	8.41	17 *	26 -127

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

Spike Recovery: 3 out of 11 outside limits

COMMENTS:

Lionville Laboratory Use Only

02126279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLP Horsham Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF# B03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPLC Del: STD TAT: 3 days

Date Rec'd: 12-3-02 Date Due: 12-6-02

		A-C	D E F G H						J	L	K	M	N	O	P	Q
Refrigerator #		1	5	5					5						1	5
#/Type Container	Liquid	3AG	2AG	4AG					1PL	1PL	1PL	1PL	1PL	1PL	1PL	1PL
	Solid															
Volume	Liquid	40	L	L					500	500	500	500	500	500	500	250
	Solid															
Preservatives		HCL	—	—					HNO3	HNO3	—	HNO3 NaOH	—	HCL	—	—
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	TOT CN	IC Fl, NS	Cl, Br, PO4	TSS TDS	TOC	CND	Tot N

Lionville Laboratory Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - ER/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 X	OPCB					MET (1)	ICNO	IC (2) IPH	ISPD	TSS TDS	TOT	ISPD	IGN
001	J009L0	X	X	W	11/20/02	1140	3	2	4					1	1	1	1	1	1	1	1

Special Instructions:

✓ SAMPLES = High Basic

Unpreserved

SAF B03-006

DATE/REVISIONS:

MET (1) 1. As, Ba, Cd, Cr, Pb, Se, Ag, Li, Na, Hg

IC (2) 2. ICBR, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

12-5-02 3. Change 0625H to 0625X

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/3/02	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

7906 4360 4281

pH NO3 NO2 PO4

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 1 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: ~~21~~ Days 3 M 12.5.2		
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	Air Quality ☐
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 081	Bill of Lading/Air Bill No.: 7906 4360 4281	

POSSIBLE SAMPLE HAZARDS/REMARKS: Radioactive

Tie To J009L1

Special Handling and/or Storage: Cool 4°C

Preservation	HNO3 to pH <2	None	None	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	ZnAc+NaOH to pH >9 Cool	Cool 4C	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cooled to 4C
Type of Container	P	P	P	P	P	P	P	P	aG	aG
No. of Container(s)	5	1	1	1	1	1	1	1	1	4
Volume	1000mL	125mL	125mL	500mL A	500mL L	500mL M	500mL K	500mL N	500mL O	1000mL ~~G REF~~ W 12
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Tritium - H3	Carbon-14	See item (2) in Special Instructions.	Total Cyanide - 9010	Sulfides - 9030	See item (3) in Special Instructions.	TSS - 160.2; TDS - 160.1	TOC - 415.1	PCBs - 8082 FGHI

Sample No.	Matrix *	Sample Date	Sample Time										
J009L0	WATER	11-20-02	1140	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time		
SSGALOIS	112002 1550	REF 1A	112002 1550
Relinquished By/Removed From	Date/Time 1000	Received By/Stored In	Date/Time 1000
1A 3728	12-2-02		12-2-02
Relinquished By/Removed From	Date/Time 1000	Received By/Stored In	Date/Time
	12-2-02	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
	12-3-02 0950		12-3-02 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.

** The laboratory is to analyze pH within 24 hours of sample receipt.

(1) Americium-241; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-228, Thorium-232}; Isotopic Uranium

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Lithium, Sodium}; Mercury - 7470 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12-12-02

Matrix *

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 2 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A-030081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Ti. To J009L1

Special Handling and/or Storage
Cool 4°C

Preservation	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cool 4C	None							
Type of Container	aG	aGs*	G/P	aG							
No. of Container(s)	2	3	1	1							
Volume	1000mL AB DE	40mL ABC	500mL P	250mL P							
SAMPLE ANALYSIS	Semi-VOA - 8270A (ETF)	VOA - 8260A (ETF)	Conductivity - 120.1	Ignitability - 1010							

Sample No.	Matrix *	Sample Date	Sample Time										
J009L0	WATER	11-20-02	1140	X	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SIGALE/JGale	112002 1550	REF 1A	112002 1550
Relinquished By/Removed From	Date/Time 1000	Received By/Stored In	Date/Time 1000
1A 3728	12.2.02	R.Fahlberg R.Fahlberg	12.2.02
Relinquished By/Removed From	Date/Time 1000	Received By/Stored In	Date/Time
R.Fahlberg R.Fahlberg	12.2.02	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	12-3-02 0950	[illegible]	12-3-02 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.
** The laboratory is to analyze pH within 24 hours of sample receipt.

Personnel not available to relinquish samples from the 3728
Ref # 1A on 12/2/02

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: HANFORD

urchase Order/Project: NA

DATE: 12/3/02

AF# / SOW# / Release #: B03-006

aboratory SDG #: 02/12L279

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 (JM 12/3/02)	☑ 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)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

C-96-001 3°

Samples are High Base

(1) Received pH, NO3, NO2, PO4 Out of Hold

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

13

RECEIVED
DEC 2002

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-006 H2005

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J009L0	001	W	02LE1454	11/20/02	12/03/02	12/05/02
J009L0	001 R1	W	02LE1468	11/20/02	12/07/02	12/09/02
J009L0	001 MS	W	02LE1454	11/20/02	12/03/02	12/05/02
J009L0	001 MSD	W	02LE1454	11/20/02	12/03/02	12/05/02

LAB QC:

PBLKHB	MB1	W	02LE1454	N/A	12/03/02	12/04/02
PBLKHB	MB1 BS	W	02LE1454	N/A	12/03/02	12/04/02
PBLKHF	MB1	W	02LE1468	N/A	12/07/02	12/09/02
PBLKHF	MB1 BS	W	02LE1468	N/A	12/07/02	12/09/02
PBLKHF	MB1 BSD	W	02LE1468	N/A	12/07/02	12/09/02

12/13/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-006
LVL #: 0212L279
SDG/SAF #: H2005/B03-006

W.O. #: 11343-606-001-9999-00
Date Received: 12-03-02

PCB

One (1) water sample was collected on 11-20-02.

The sample and its associated QC samples were extracted on 12-03-02, re-extracted on 12-07-02, and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 12-04,05,09-02. The extraction procedure was based on method 3520 and the extracts were analyzed based on method 8082 for Aroclors only.

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 with the exception of holding time.

   The sample was received outside of technical holding time for extraction. All required holding times for analysis have been met.

   Because of low surrogate recoveries, the sample was re-extracted. Due to the sample matrix (pH>12), the sample was re-extracted with reduced sample volume. Reporting limits have been adjusted accordingly. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

2. The sample and its associated QC samples received a Sulfuric Acid cleanup.

3. All method blanks were below the reporting limits for all target compounds.

4. Two (2) of seventeen (17) obtainable surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).

5. All blank spike recoveries were within acceptance criteria.

6. Three (3) of four (4) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

12/16/02
Date

pef\r:\group\data\pest\tmu hanford\12L-279.pcb

LVLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 02EX046

Initiator: Bernard Foley
Date: 12/4/02
Client: ~~Bechtel~~ TNU - Hanford

Batch: 0212L279
Samples: 1
Method: SW846/MCAWW/CLP/

Parameter: OPCB/BNA
Matrix: W
Prep Batch: 1454 PCB
1453 BNA

1. Reason for SDR

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

b. General Discrepancy

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

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

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

PH of greater then 12

2. Known or Probable Causes(s)

Matrix 6mls of Di H_2SO_4 was added to Neutralize PCB Sample
BNA was extracted base fraction first

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 12/6/02

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

5. Final Action...signature/date: [signature] Other Explanation:

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

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

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

QA-105-A-0801

04

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0260566

Initiator: Bryce Santoro
Date: 12/6/02
Client: TUO

Batch: 02LL279
Samples: 001
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Water
Prep Batch: 02LE1454

1. Reason for SDR

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

b. General Discrepancy

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

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

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

(1) Unacceptable surrogate recoveries. TCX recovery was unobtainable due to massive interference. DCB recovery was 5%.

(2) 3 of 4 ms/msd recoveries were outside acceptance criteria (ref Formal Sum)

2. Known or Probable Causes(s)

(1) Improper or incomplete solvent exchange during extraction process - possibly due to incomplete buffer to (apH 7) ~~do~~ sample initially in pH > 12

3. Discussion and Proposed Action

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

Other Description: No volume left for re-extract, except 250 mL in Amber jar sent for ignitability test.

#1. narrate report
#2. rerun from 250 ml jar

4. Project Manager Instructions...signature/date: 12/6/02

✓ Concur with Proposed Action ~~#1 report + narrate~~ #2
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
✓ Client Contacted: Date/Person Jim Keasner 12/6/02
__ Add
__ Cancel

5. Final Action...signature/date: _____ Other Explanation:

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

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

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

05

QA-105-A-0801

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 12/11/02 12:03

RFW Batch Number: **0212L279** Client: **TNUHANFORD B03-006 H2005** Work Order: 11343606001 Page: 1

	Cust ID:	J009L0	J009L0	J009L0	J009L0	PBLKHB	PBLKHB BS
Sample Information	RFW#:	001	001	001 MS	001 MSD	02LE1454-MB1	02LE1454-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
			REPREP				
Surrogate:	Tetrachloro-m-xylene	I %	85 %	65 %	45 %	85 %	80 %
	Decachlorobiphenyl	5 * %	40 %	30 %	10 * %	95 %	50 %
Aroclor-1016		1.1 U	2.0 U	82 %	43 * %	1.0 U	69 %
Aroclor-1221		2.2 U	4.0 U	2.2 U	2.2 U	2.0 U	2.0 U
Aroclor-1232		1.1 U	2.0 U	1.1 U	1.1 U	1.0 U	1.0 U
Aroclor-1242		1.1 U	2.0 U	1.1 U	1.1 U	1.0 U	1.0 U
Aroclor-1248		1.1 U	2.0 U	1.1 U	1.1 U	1.0 U	1.0 U
Aroclor-1254		1.1 U	2.0 U	1.1 U	1.1 U	1.0 U	1.0 U
Aroclor-1260		1.1 U	2.0 U	37 * %	12 * %	1.0 U	62 %

	Cust ID:	PBLKHF	PBLKHF BS	PBLKHF BSD
Sample Information	RFW#:	02LE1468-MB1	02LE1468-MB1	02LE1468-MB1
	Matrix:	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L
Surrogate:	Tetrachloro-m-xylene	85 %	90 %	85 %
	Decachlorobiphenyl	95 %	85 %	95 %
Aroclor-1016		1.0 U	86 %	85 %
Aroclor-1221		2.0 U	2.0 U	2.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	89 %	90 %

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

Lionville Laboratory Use Only

02126279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAFH B03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 3 days

Date Rec'd: 12-3-02 Date Due: 12-6-02

		A-C	DE	F	G,H	I	J	L	K	M	N	O	P	Q
Refrigerator #		1	5	5			5							5
#/Type Container	Liquid	3AG	2AG	4AG			1PL	1PL	1PL	1PL	1PL	1PL	1PL	1PL
	Solid													
Volume	Liquid	40	L	L			500	500	500	500	500	500	500	250
	Solid													
Preservatives		HCL	—	—			HNO3	NaOH	—	NaOH	—	HCL	—	—
ANALYSES REQUESTED →		ORGANIC					INORG							
		VOA	BNA	Pest/PCB	Herb		Metal	CN	TC	Sulfide	TSS TDS	TOC	Cyan	Tag Neg

Lionville Laboratory Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB				MET (1)	ICNO	IC (6) IPH	ISFD	ITSS ITDS	IOCT	ISFD	IGN
	001	T009 LO	X	X	W	11/06/02	1140	3	2	4				1	1	1	1	1	1	1	1

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

Special Instructions:

v SAMPLES = High Basic

Unpreserved

SAF B03-006

DATE/REVISIONS:

MET (1) 1. As, Ba, Cd, Cr, Pb, Se, Ag, Li, Na, Hg

IC (6) 2. ICBR, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

12-5-02 3. Change 0625H to 0625X

4.

5.

6.

Lionville Laboratory Use Only

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

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. 3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/3/02	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

7906 4360 4281

pH NO3 NOL POY

02126011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 1 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: ~~21~~ Days 3 WH 12-5-02	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS: Radioactive

Tie To J009L1

Special Handling and/or Storage: Cool 4°C

Preservation	HNO3 to pH <2	None	None	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	ZnAc+NaOH to pH >9 Cool	Cool 4C	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cooled to 4C
Type of Container	P	P	P	P	P	P	P	P	aG	aG
No. of Container(s)	5	1	1	1	1	1	1	1	1	4
Volume	1000mL	125mL	125mL	500mL J	500mL L	500mL M	500mL K	500mL N	500mL O	1000mL ~~G H E F~~
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Tritium - H3	Carbon-14	See item (2) in Special Instructions.	Total Cyanide - 9010	Sulfides - 9030	See item (3) in Special Instructions.	TSS - 160.2; TDS - 160.1	TOC - 415.1	PCBs - 8082 FGHI
Sample No. / Matrix * / Sample Date / Sample Time										
J009L0 / WATER / 11-20-02 / 1140	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
S. Gale	11 20 02 1550	RGF 1A	11 20 02 1550
1A 3728	12-2-02 1000	[illegible]	12-2-02 1000
[illegible]	12-2-02 1000	[illegible]	
[illegible]	12-3-02 0950	[illegible]	12-3-02 0950

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.

** The laboratory is to analyze pH within 24 hours of sample receipt.

(1) Americium-241; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-228, Thorium-232}; Isotopic Uranium

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Lithium, Sodium}; Mercury - 7470 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12 12 02

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 2 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A-038081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J009L1

Special Handling and/or Storage
Cool 4°C

Preservation	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cool 4C	None							
Type of Container	aG	aGs*	G/P	aG							
No. of Container(s)	2	3	1	1							
Volume	1000mL	40mL	500mL	250mL							
	~~AB~~ DE	ABC	P	G							
SAMPLE ANALYSIS	Semi-VOA - 8270A (ETF)	VOA - 8260A (ETF)	Conductivity - 120.1	Ignitability - 1010							
Sample No. / Matrix * / Sample Date / Sample Time											
J009L0 / WATER / 11-20-02 / 1140	X	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: SIGALE SIGALE	Received By/Stored In: REF 1A	11 20 02 1550
Relinquished By/Removed From: 1A 3728	Received By/Stored In: R. Fahlberg R. Fahlberg	12.2.02 1000
Relinquished By/Removed From: ERC R. Fahlberg R. Fahlberg	Received By/Stored In: Fed Ex	12.2.02 1000
Relinquished By/Removed From: Fed Ex	Received By/Stored In: [illegible]	12-3-02 0950
Relinquished By/Removed From:	Received By/Stored In:	
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.
** The laboratory is to analyze pH within 24 hours of sample receipt.

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12/2/02

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: HANFORD

Purchase Order/Project: MA

DATE: 12/3/02

SAF# / SOW# / Release #: B03-006

Laboratory SDG #: 0212L279

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 (JM 12/3/02)	☑ 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)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments: Samples are High Base

2C-96-001 3°

(1) Received pH, NO3, NO2, PO4 Out of Hold

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

RECEIVED
DEC 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B03-006

H2005

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J009L0						
SILVER, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
SILVER, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
SILVER, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
SILVER, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
ARSENIC, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
ARSENIC, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
ARSENIC, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
ARSENIC, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
BARIUM, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
BARIUM, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
BARIUM, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
BARIUM, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
CADMIUM, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
CADMIUM, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
CADMIUM, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
CADMIUM, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
CHROMIUM, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
CHROMIUM, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
CHROMIUM, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
CHROMIUM, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
MERCURY, TOTAL	001	W	02C0356	11/20/02	12/03/02	12/04/02
MERCURY, TOTAL	001 REP	W	02C0356	11/20/02	12/03/02	12/04/02
MERCURY, TOTAL	001 MS	W	02C0356	11/20/02	12/03/02	12/04/02
LITHIUM, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
LITHIUM, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
LITHIUM, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
LITHIUM, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
SODIUM, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
SODIUM, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
SODIUM, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
SODIUM, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02
LEAD, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
LEAD, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
LEAD, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
LEAD, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B03-006

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001	W	02L0709	11/20/02	12/04/02	12/06/02
SELENIUM, TOTAL	001 REP	W	02L0709	11/20/02	12/04/02	12/06/02
SELENIUM, TOTAL	001 MS	W	02L0709	11/20/02	12/04/02	12/06/02
SELENIUM, TOTAL	001 MSD	W	02L0709	11/20/02	12/04/02	12/06/02

LAB QC:

SILVER LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
SILVER, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02
ARSENIC LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
ARSENIC, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02
BARIUM LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
BARIUM, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02
CADMIUM LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
CADMIUM, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02
CHROMIUM LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
CHROMIUM, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02
MERCURY LABORATORY	LC1 BS	W	02C0356	N/A	12/03/02	12/04/02
MERCURY, TOTAL	MB1	W	02C0356	N/A	12/03/02	12/04/02
MERCURY, TCLP LEACHA	MB2	W	02C0356	N/A	12/03/02	12/04/02
LITHIUM LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/06/02
LITHIUM, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/06/02
SODIUM LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/06/02
SODIUM, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/06/02
LEAD LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
LEAD, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02
SELENIUM LABORATORY	LC1 BS	W	02L0709	N/A	12/04/02	12/05/02
SELENIUM, TOTAL	MB1	W	02L0709	N/A	12/04/02	12/05/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-006
LVL#: 0211L279
SDG/SAF#: H2005/B03-006

W.O.#: 11343-606-001-9999-00
Date Received: 12-03-02

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 liquid sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary. For ICP digestion, the sample was brought to a pH of less than 2 in the beaker. For Mercury, the sample was prepped with a ten fold dilution.

   The sample was run with various dilutions due to sample matrix.

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. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

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

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
J009L0	Lithium	80,000	102.9
	Sodium	1,600,000	102.0

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

12-10-02
Date

gmb/m12-279

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#: 02ILL279

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	✓6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	✓6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	✓6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

RFW 21-21L-033/N-10/96

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/06/02

CLIENT: TNU-HANFORD B03-006 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J009L0	Silver, Total	14.0	u	UG/L	14.0	10.0
		Arsenic, Total	38.0	u	UG/L	38.0	10.0
		Barium, Total	11.6		UG/L	3.0	10.0
		Cadmium, Total	4.0	u	UG/L	4.0	10.0
		Chromium, Total	27.2		UG/L	10.0	10.0
		Mercury, Total	1.0	u	UG/L	1.0	10.0
		Lithium, Total	331000		UG/L	616	80.0
		Sodium, Total	5570000		UG/L	2060	80.0
		Lead, Total	24.0	u	UG/L	24.0	10.0
		Selenium, Total	38.0	u	UG/L	38.0	10.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/06/02

CLIENT: TNU-HANFORD B03-006 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0709-MB1	Silver, Total	1.4	u	UG/L	1.4	1.0
		Arsenic, Total	3.8	u	UG/L	3.8	1.0
		Barium, Total	0.35		UG/L	0.30	1.0
		Cadmium, Total	0.40	u	UG/L	0.40	1.0
		Chromium, Total	1.0	u	UG/L	1.0	1.0
		Lithium, Total	7.7	u	UG/L	7.7	1.0
		Sodium, Total	36.3		UG/L	25.7	1.0
		Lead, Total	2.7		UG/L	2.4	1.0
		Selenium, Total	3.8	u	UG/L	3.8	1.0
BLANK1	02C0356-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	02C0356-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 12/06/02

CLIENT: TNU-HANFORD B03-006 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J009L0	Silver, Total	49.9	14.0 u	50.0	99.8	10.0
		Silver, Total MSD	48.3	14.0 u	50.0	96.6	10.0
		Arsenic, Total	2180	38.0 u	2000	109.1	10.0
		Arsenic, Total MSD	2170	38.0 u	2000	108.5	10.0
		Barium, Total	2080	11.6	2000	103.6	10.0
		Barium, Total MSD	2080	11.6	2000	103.4	10.0
		Cadmium, Total	54.2	4.0 u	50.0	108.4	10.0
		Cadmium, Total MSD	54.9	4.0 u	50.0	109.8	10.0
		Chromium, Total	242	27.2	200	107.6	10.0
		Chromium, Total MSD	240	27.2	200	106.5	10.0
		Mercury, Total	9.6	1.0 u	10.0	96.0	10.0
		Lithium, Total	330000	331000	1000	-45. *	80.0
		Lithium, Total MSD	323000	331000	1000	-810. *	80.0
		Sodium, Total	5470000	5570000	25000	-420. *	80.0
		Sodium, Total MSD	5420000	5570000	25000	-590. *	80.0
		Lead, Total	544	24.0 u	500	108.7	10.0
		Lead, Total MSD	538	24.0 u	500	107.7	10.0
		Selenium, Total	2140	38.0 u	2000	107.0	10.0
		Selenium, Total MSD	2200	38.0 u	2000	110.1	10.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 12/06/02

CLIENT: TNU-HANFORD B03-006 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	J009L0	Silver, Total	99.8	96.6	3.3
		Arsenic, Total	109.1	108.5	0.56
		Barium, Total	103.6	103.4	0.22
		Cadmium, Total	108.4	109.8	1.3
		Chromium, Total	107.6	106.5	1.0
		Lithium, Total	-45.	-810. *	NC up 179%
		Sodium, Total	-420.	-590. *	NC, 2/pl/a 33.7%
		Lead, Total	108.7	107.7	0.92
		Selenium, Total	107.0	110.1	2.8

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 12/06/02

CLIENT: TNU-HANFORD B03-006 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J009L0	Silver, Total	14.0 u	14.0 u	NC	10.0
		Arsenic, Total	38.0 u	38.0 u	NC	10.0
		Barium, Total	11.6	10.8	7.1	10.0
		Cadmium, Total	4.0 u	4.0 u	NC	10.0
		Chromium, Total	27.2	30.5	11.4	10.0
		Mercury, Total	1.0 u	1.0 u	NC	10.0
		Lithium, Total	331000	330000	0.19	80.0
		Sodium, Total	5570000	5510000	1.1	80.0
		Lead, Total	24.0 u	24.0 u	NC	10.0
		Selenium, Total	38.0 u	38.0 u	NC	10.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/06/02

CLIENT: TNU-HANFORD B03-006 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0709-LC1	Silver, LCS	500	500	UG/L	100.0
		Arsenic, LCS	10000	10000	UG/L	100.1
		Barium, LCS	5020	5000	UG/L	100.4
		Cadmium, LCS	255	250	UG/L	102.0
		Chromium, LCS	509	500	UG/L	101.8
		Lithium, LCS	5010	5000	UG/L	100.2
		Sodium, LCS	24600	25000	UG/L	98.3
		Lead, LCS	2520	2500	UG/L	100.7
		Selenium, LCS	10200	10000	UG/L	102.1
LCS1	02C0356-LC1	Mercury, LCS	5.2	5.0	UG/L	103.1

(6) VOA BNA P/PCB Metals DIG Nitr

Lionville Laboratory Use Only

02126279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF# B03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPK Del: SFD TAT: 3 days

Date Rec'd: 12-3-02 Date Due: 12-6-02

		A-C	D-E	F-G-H					J	L	K	M	N	O	P	Q
Refrigerator #		1	5	5					5						1	5
#/Type Container	Liquid	3AG	2AG	4AG					1PL	1PL	1PL	1PL	1PL	1PL	1PL	1PL
	Solid															
Volume	Liquid	40	L	L					500	500	500	500	500	500	500	250
	Solid															
Preservatives		HCL	—	—					H_2SO_4	NaOH	—	ZnAc NaOH	—	HCL	—	—
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	TC Anions	Sulfide	TSS TDS	TOC	Cond.	Alk NH3
Lionville Laboratory Use Only		0624H	0625H	0PCB					MET①	ICNHO	IC① IPH	ISFD	TSS TDS	TOCT	ISPCD	IIGN

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	0PCB				MET①	ICNHO	IC① IPH	ISFD	TSS TDS	TOCT	ISPCD	IIGN
001	I009LO	X	X	W	11/04/02	1140	3	2	4				1	1	1	1	1	1	1	1

Special Instructions:

v Samples = High Basic

Unpreserved

SAF B03-006

DATE/REVISIONS:

MET① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Li, Na, Hg

IC① 2. ICBR, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

12-5-02 3. Change 0625H to 0625X

4.

5.

6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # See Bill
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. 3 °C

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

NOTES:

Relinquished by	Received by	Date	Time
		12/3/02	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

DEWATERED

Lionville Laboratory Use Only

02/2C279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAFH B03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 3 days

Date Rec'd: 12-3-02 Date Due: 12-6-02

	A-C	D-E	F-G-H					J	L	K	M	N	O	P	Q
Refrigerator #	1	5	5					5						1	5
#/Type Container (Liquid)	3AG	2AG	4AG					1PL	1PL	1PL	1PL	1PL	1PL	1PL	1AG
#/Type Container (Solid)															
Volume (Liquid)	40	L	L					500	500	500	500	500	500	500	250
Volume (Solid)															
Preservatives	HCL	—	—					HNO3	NaOH	—	ZNAC NaOH	—	HCL	—	—
ANALYSES REQUESTED (ORGANIC)	VOA	BNA	Pest/PCB	Herb				INORG Metal	INORG TPH	IC Anions	Sulfide	TSS TDS	TOC	Cyan	Total Phos

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	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8624H	8625H	8PCB				MCT①	ICNTO	IC① IPH	ISFD	TSS TDS	TOCT	ISFD	IIGN
001	T009LO	X	X	W	11-30-02	1140	3	2	4				1	1	1	1	1	1	1	1

Special Instructions:

✓ SAMPLES = High Basic

Unpreserved

SAF B03-006

DATE/REVISIONS:

MCT① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Li, Na, Hg

IC① 2. ICBR, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

3.

4.

5.

6.

Lionville Laboratory Use Only

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

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 3 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12/3/02	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL DEWITTEN		

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

NOTES: [illegible]

14

02/02 01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 1 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: ~~21~~ Days 3 M 12-5-2	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS: Radioactive

Tie To J009L1

Special Handling and/or Storage: Cool 4°C

Preservation	HNO3 to pH <2	None	None	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	ZnAc+NaOH to pH >9 Cool	Cool 4C	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cooled to 4C
Type of Container	P	P	P	P	P	P	P	P	aG	aG
No. of Container(s)	5	1	1	1	1	1	1	1	1	4
Volume	1000mL	125mL	125mL	500mL J	500mL L	500mL M	500mL K	500mL N	500mL O	1000mL ~~P~~ W 12
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Tritium - H3	Carbon-14	See item (2) in Special Instructions.	Total Cyanide - 9010	Sulfides - 9030	See item (3) in Special Instructions.	TSS - 160.2; TDS - 160.1	TOC - 415.1	PCBs - 8082 FGHI
Sample No.	Matrix *	Sample Date	Sample Time							
J009L0	WATER	11-20-02	1140	X	X	X	X	X	X	X	X	X	X	X	X

12-2-02

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
S.S. Galle	112002 1550	REF 1A	112002 1550
1A 3728	12-2-02 1000	R. Fahlberg	12-2-02 1000
R. Fahlberg	12-2-02 1000	Fed Ex	
Fed Ex	12-3-02 0950		12-3-02 0950

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.

** The laboratory is to analyze pH within 24 hours of sample receipt.

(1) Americium-241; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr; Isotopic Thorium {Thorium-228, Thorium-232}; Isotopic Uranium

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Lithium, Sodium}; Mercury - 7470 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12-12-02

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

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

15

BHI-EE-011 (03/01/2000)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B03-006-01	Page 2 of 2
Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 21 Days
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR		SAF No.: B03-006	Air Quality ☐
Ice Chest No.: ERC 96-081	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A038081		Bill of Lading/Air Bill No.: 7906 4360 4281	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J009L1

Special Handling and/or Storage
Cool 4°C

Preservation	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cool 4C	None							
Type of Container	aG	aGs*	G/P	aG							
No. of Container(s)	2	3	1	1							
Volume	1000mL A B DE	40mL ABC	500mL P	250mL Q							
SAMPLE ANALYSIS	Semi-VOA - 8270A (ETF)	VOA - 8260A (ETF)	Conductivity - 120.1	Ignitability - 1010							
Sample No. / Matrix * / Sample Date / Sample Time											
J009L0 / WATER / 11-20-02 / 1140	X	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: S. GALE	Received By/Stored In: REF 1A	11/20/02 1550
Relinquished By/Removed From: 1A 3728	Received By/Stored In: R. Fahlberg	12.2.02 1000
Relinquished By/Removed From: ERC R. Fahlberg	Received By/Stored In: Fed Ex	12.2.02 1000
Relinquished By/Removed From:	Received By/Stored In:	12-3-02 0950
Relinquished By/Removed From:	Received By/Stored In:	
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.
** The laboratory is to analyze pH within 24 hours of sample receipt.

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12/2/02

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

LIENT: HANFORD

urchase Order/Project: NA

DATE: 12/3/02

AF# / SOW# / Release #: B03-006

aboratory SDG #: 02/2L279

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 LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes (JM 12/3/02)	☑ 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)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

C-96-001 3°

Samples are High Base

(1) Received pH, NO3, NO2, PO4 Out of Hold

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

RECEIVED
DEC 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-006 H2005

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
J009L0							
BROMIDE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	
BROMIDE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	
BROMIDE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	
CHLORIDE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	
CHLORIDE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	
CHLORIDE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	
FLUORIDE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	
FLUORIDE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	
FLUORIDE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	
NITRITE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	1602
NITRITE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	1628
NITRITE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	1638
NITRATE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	1602
NITRATE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	1628
NITRATE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	1638
TOTAL CYANIDE	001	W	02LCB95	11/20/02	12/06/02	12/06/02	
TOTAL CYANIDE	001 REP	W	02LCB95	11/20/02	12/06/02	12/06/02	
TOTAL CYANIDE	001 MS	W	02LCB95	11/20/02	12/06/02	12/06/02	
PHOSPHATE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	1602
PHOSPHATE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	1628
PHOSPHATE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	1638
SULFATE BY IC	001	W	02LIC082	11/20/02	12/04/02	12/04/02	
SULFATE BY IC	001 REP	W	02LIC082	11/20/02	12/04/02	12/04/02	
SULFATE BY IC	001 MS	W	02LIC082	11/20/02	12/04/02	12/04/02	
IGNITABILITY	001	W	02LFP030	11/20/02	12/09/02	12/09/02	
TOTAL ORGANIC CARBON	001	W	02LTC047	11/20/02	12/09/02	12/09/02	
TOTAL ORGANIC CARBON	001 REP	W	02LTC047	11/20/02	12/09/02	12/09/02	
TOTAL ORGANIC CARBON	001 MS	W	02LTC047	11/20/02	12/09/02	12/09/02	
PH	001	W	02LPH098	11/20/02	12/04/02	12/04/02	1439
PH	001 REP	W	02LPH098	11/20/02	12/04/02	12/04/02	1442
SULFIDE	001	W	02LSDA58	11/20/02	12/09/02	12/09/02	
SULFIDE	001 REP	W	02LSDA58	11/20/02	12/09/02	12/09/02	
SULFIDE	001 MS	W	02LSDA58	11/20/02	12/09/02	12/09/02	
SULFIDE	001 MSD	W	02LSDA58	11/20/02	12/09/02	12/09/02	
SPECIFIC CONDUCTANCE	001	W	02LSPA39	11/20/02	12/09/02	12/09/02	

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-006 H2005

DATE RECEIVED: 12/03/02 LVL LOT # :0212L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SPECIFIC CONDUCTANCE	001 REP	W	02LSPA39	11/20/02	12/09/02	12/09/02
TOTAL DISSOLVED SOLI	001	W	02LSS167	11/20/02	12/06/02	12/06/02
TOTAL DISSOLVED SOLI	001 REP	W	02LSS167	11/20/02	12/06/02	12/06/02
TOTAL SUSPENDED SOLI	001	W	02LSS166	11/20/02	12/04/02	12/04/02
TOTAL SUSPENDED SOLI	001 REP	W	02LSS166	11/20/02	12/04/02	12/04/02

LAB QC:

BROMIDE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
BROMIDE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
CHLORIDE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
CHLORIDE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
FLUORIDE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
FLUORIDE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
NITRITE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
NITRITE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
NITRATE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
NITRATE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
TOTAL CYANIDE	LCS L	W	02LCB95	N/A	12/06/02	12/06/02
TOTAL CYANIDE	LCS L	W	02LCB95	N/A	12/06/02	12/06/02
TOTAL CYANIDE	MB1	W	02LCB95	N/A	12/06/02	12/06/02
PHOSPHATE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
PHOSPHATE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
SULFATE BY IC	MB1	W	02LIC082	N/A	12/04/02	12/04/02
SULFATE BY IC	MB1 BS	W	02LIC082	N/A	12/04/02	12/04/02
TOTAL ORGANIC CARBON	MB1	W	02LTC047	N/A	12/09/02	12/09/02
TOTAL ORGANIC CARBON	MB1 BS	W	02LTC047	N/A	12/09/02	12/09/02
SULFIDE	MB1	W	02LSDA58	N/A	12/09/02	12/09/02
SULFIDE	MB1 BS	W	02LSDA58	N/A	12/09/02	12/09/02
SULFIDE	MB1 BSD	W	02LSDA58	N/A	12/09/02	12/09/02
SPECIFIC CONDUCTANCE	MB1	W	02LSPA39	N/A	12/09/02	12/09/02
SPECIFIC CONDUCTANCE	MB1 BS	W	02LSPA39	N/A	12/09/02	12/09/02
TOTAL DISSOLVED SOLI	MB1	W	02LSS167	N/A	12/06/02	12/06/02
TOTAL DISSOLVED SOLI	MB1 BS	W	02LSS167	N/A	12/06/02	12/06/02
TOTAL DISSOLVED SOLI	MB1 BSD	W	02LSS167	N/A	12/06/02	12/06/02
TOTAL SUSPENDED SOLI	MB1	W	02LSS166	N/A	12/04/02	12/04/02
TOTAL SUSPENDED SOLI	MB1 BS	W	02LSS166	N/A	12/04/02	12/04/02
TOTAL SUSPENDED SOLI	MB1 BSD	W	02LSS166	N/A	12/04/02	12/04/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-006 H2005
LVL#: 0212L279

W.O.#: 11343-606-001-9999-00
Date Received: 12-03-02

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 water sample. It was noted that there was disparity in the appearance of the samples submitted as the portion for Total Cyanide was described as thick and soapy or cloudy yet the portion for Ignitability was less viscous (more water-like) and clear.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary. Elevated reporting limits for Bromide, Fluoride, Nitrate, Nitrite and Phosphate are due to the necessity for dilutions to diminish co-elution effects. An elevated reporting limit for Sulfide is due to the submittal of a minimal sample volume for the test, as well as, the unusual nature of the sample matrix.

   Acidification prior to analysis for Total Organic Carbon (TOC) was necessary as the sample was extremely basic.

3. Sample holding times as required by the method and/or contract were met with the exception of pH, Nitrate, Nitrite, Phosphate, Sulfide, Total Dissolved Solids (TDS) and Total Suspended Solids (TSS) that were received past hold (see sample chronology summary for analyses times for short hold samples (times of 48 hours or less)).

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. The duplicate LCS for Sulfide, TDS and TSS were within the 20% Relative Percent Difference (RPD) control limit.

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages. Including pages 03A and 06A.

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

7. The matrix spike (MS) recoveries for Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate, Total Organic Carbon (TOC) and Sulfide were within the 75-125% control limits, however MS recovery for Total Cyanide was below the control limits that may be attributed to sample inhomogeneity and/or a negative interferent to the spiking solution. The MS duplicate for Sulfide was within the 20% RPD control limit.

8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrate, Nitrite, Total Cyanide, Phosphate, Sulfate, TOC, pH, Sulfide, Specific Conductance and TDS were within the 20% RPD control limit, however replicate analysis for TSS was outside the control limit that may be attributed to sample inhomogeneity.

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

Pat C

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

12-13-02
Date

njp\i12-279

LVLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 02WC07

Initiator: S. Swanek
Date: 12/09/02
Client: TNU-Hanford

Batch: 02L2L279
Samples: -01
Method: SW846/MCAWW/CLP/

Parameter: TOC, CN, ~~Flashpoint~~ Ignitability
Matrix: Water
Prep Batch: 02L7C07

1. Reason for SDR

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

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

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

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

TOC - Sample Basic
CN and Ignitability samples appear to look different. (see below) Ignitability

2. Known or Probable Causes(s)

CN/TOC - Sample appeared - thick Soapy, but ~~Flashpoint~~ Sample was - very watery like & clear
both were basic

3. Discussion and Proposed Action

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

Other Description:

Add H_2SO_4 to Aliquot to pH < 2 prior to analysis for TOC.
Propose to narrate.
MJP 12-9-02

4. Project Manager Instructions...signature/date: TJR for OJ - per phone convo. 12-12-02
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: M Perrone 12-13-02
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator		__ Metals: Beegle
__	X Lab General Manager: M. Taylor	3	__ Inorganic: Perrone
2	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
4	X QA (file): ~~Alberts~~ Seivenka	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	✓ 9010B ✓ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total ✓ Organic ___ Inorganic Carbon	✓ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
✓ pH ___ pH; paper	___ 150.1	✓ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	✓ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	✓ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach		1312	
Total ✓ Dissolved ✓ Suspended ___Solids	160 ✓.1	✓.2 ___.3	
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		

Other: Ignitability **Method:** SW 1010

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Inorganic Data Summary Report
Physical Testing Observation

Client: TNU-HANFORD B03-006 H2005
LVL#: 0212L279

W.O.#: 11343-606-001-9999-00
Date Received: 12-03-02

Analyte:	**Observation:**
Ignitability	Samples J009L0 and J009L0 duplicate did not ignite. p-Xylene was used to determined the accuracy of the ignitability apparatus. The p-Xylene will ignite at 81°F +/- 1°F. For this test, the p-Xylene ignited at 80°F and 81°F.

njp\i12-279.pt2

LIONVILLE LABORATORY INC.

06A

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/13/02

CLIENT: TNUHANFORD B03-006 H2005 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J009L0	Bromide by IC	2.5 u	MG/L	2.5	10.0
		Chloride by IC	65.5	MG/L	2.5	10.0
		Fluoride by IC	25.0 u	MG/L	25.0	100
		Nitrite by IC	2.50 u	MG/L	2.50	10.0
		Nitrate by IC	2.50 u	MG/L	2.50	10.0
		Cyanide, Total	300	UG/L	25.0	1.0
		Phosphate by IC	2.5 u	MG/L	2.5	10.0
		Sulfate by IC	219	MG/L	25.0	100
		Total Organic Carbon	61.9	MG/L	10.0	20.0
		pH	10	PH UNIT	0.01	1.0
		Sulfide	40.0 u	MG/L	40.0	1.0
		Specific Conductance	18200	US/CM	1.0	1.0
		Total Dissolved Solids	12400	MG/L	50.0	1.0
		Total Suspended Solids	5.00	MG/L	5.00	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/13/02

CLIENT: TNUHANFORD B03-006 H2005 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LIC082-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK1	02LCB95-MB1	Cyanide, Total	5.00 u	UG/L	5.00	1.0
BLANK10	02LTC047-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	02LSDA58-MB1	Sulfide	1.0 u	MG/L	1.0	1.0
BLANK10	02LSPA39-MB1	Specific Conductance	1.0 u	US/CM	1.0	1.0
BLANK10	02LSS167-MB1	Total Dissolved Solids	5.00 u	MG/L	5.00	1.0
BLANK10	02LSS166-MB1	Total Suspended Solids	5.00 u	MG/L	5.00	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 12/13/02

CLIENT: TNUHANFORD B03-006 H2005 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J009L0	Bromide by IC	47.5	0.00	50.0	94.9	10.0
		Chloride by IC	165	65.5	100	99.4	20.0
		Fluoride by IC	502	0.00	500	100.3	100
		Nitrite by IC	49.9	2.50u	50.0	99.7	10.0
		Nitrate by IC	50.4	2.50u	50.0	100.8	10.0
		Cyanide, Total	470	300	250	68.3	1.0
		Phosphate by IC	47.4	2.5 u	50.0	94.8	10.0
		Sulfate by IC	712	219	500	98.5	100
		Total Organic Carbon	152	61.9	100	89.8	20.0
		Sulfide	390	1.0	463	83.9	1.0
		Sulfide MSD	382	1.0	463	82.2	1.0
BLANK10	02LIC082-MB1	Bromide by IC	4.9	0.25u	5.0	97.4	1.0
		Chloride by IC	4.9	0.25u	5.0	98.5	1.0
		Fluoride by IC	5.1	0.25u	5.0	102.0	1.0
		Nitrite by IC	4.91	0.25u	5.00	98.2	1.0
		Nitrate by IC	4.93	0.25u	5.00	98.6	1.0
		Phosphate by IC	4.9	0.25u	5.0	97.3	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.2	1.0
BLANK10	02LTC047-MB1	Total Organic Carbon	4.8	0.50u	5.0	95.5	1.0
BLANK10	02LSDA58-MB1	Sulfide	11.5	1.0 u	11.6	99.7	1.0
		Sulfide MSD	11.7	1.0 u	11.6	101.4	1.0
BLANK10	02LSPA39-MB1	Specific Conductance	1420	1.0 u	1410	100.7	1.0
BLANK10	02LSS167-MB1	Total Dissolved Solids	91.0	5.00u	100	91.0	1.0
		Total Dissolved Solids	102	5.00u	100	102.0	1.0
BLANK10	02LSS166-MB1	Total Suspended Solids	114	5.00u	100	113.8	1.0
		Total Suspended Solids	114	5.00u	100	113.7	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 12/13/02

CLIENT: TNUHANFORD B03-006 H2005 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	J009L0	Sulfide	83.9	82.2	2.1
BLANK10	02LSDA58-MB1	Sulfide	99.7	101.4	1.7
BLANK10	02LSS167-MB1	Total Dissolved Solids	91.0	102.0	11.4
BLANK10	02LSS166-MB1	Total Suspended Solids	113.8	113.7	0.088

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 12/13/02

CLIENT: TNUHANFORD B03-006 H2005 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J009L0	Bromide by IC	2.5 u	2.5 u	NC	10.0
		Chloride by IC	65.5	65.0	0.79	10.0
		Fluoride by IC	25.0 u	25.0 u	NC	100
		Nitrite by IC	2.50u	2.50u	NC	10.0
		Nitrate by IC	2.50u	3.63	NC	10.0
		Cyanide, Total	300	312	4.0	1.0
		Phosphate by IC	2.5 u	2.5 u	NC	10.0
		Sulfate by IC	219	216	1.1	100
		Total Organic Carbon	61.9	67.5	8.6	20.0
		pH	10.0	10.0	0.1	1.0
		Sulfide	40.0 u	40.0 u	NC	1.0
		Specific Conductance	18200	18300	1.0	1.0
		Total Dissolved Solids	12400	12800	3.1	1.0
		Total Suspended Solids	5.00	12.3	84.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/13/02

CLIENT: TNUHANFORD B03-006 H2005 LVL LOT #: 0212L279

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	02LCB95-LCS1	Cyanide, Total LCS	19.8	20.0	UG/L	98.8
LCSS2	02LCB95-LCS2	Cyanide, Total LCS	101	100	UG/L	101.3

Lionville Laboratory Use Only

02126279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

13

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF# B03-006

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 3 days

Date Rec'd: 12-3-02 Date Due: 12-6-02

		A-C	D E	F G H					J	L	K	M	N	O	P	Q
Refrigerator #		1	5	5					5						1	5
#/Type Container	Liquid	3AG	2AG	HAG					1PL	1PL	1PL	1PL	1PL	1PL	1PL	1PL
	Solid															
Volume	Liquid	40	L	L					500	500	500	500	500	500	500	250
	Solid															
Preservatives		HCL	—	—					HNO3	NaOH	—	HAC NaOH	—	HCL	—	—
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	TOT CNT	IC Fl, NO3	SO4 Pd	TSS TDS	TOC	CN, S	TKN NH3

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H X	OPCB					MCT ①	ICNO	IC ① IPH	ISPD	TSS TDS	TOCT	ISPD	IGN
001	J009L0	X	X	W	11-30-02	1140	3	2	4					1	1	1	1	1	1	1	1

Special Instructions:

✓ SAMPLES = HIGH BASIC

Unpreserved

SAF B03-006

DATE/REVISIONS:

MCT ① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Li, Na, Hg

IC ① 2. ICBR, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

12-5-02 3. Change 0625H to 0625X

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/3/02	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES: 7906 4360 4281

1st NO3 NOT POK, Sulfide TDS and TSS

02/02 0011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 1 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: ~~21~~ Days 3 WH 12-3-2	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 081		Bill of Lading/Air Bill No.: 7906 4360 4281

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J009L1

Special Handling and/or Storage
Cool 4°C

Preservation	HNO3 to pH <2	None	None	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	ZnAc+NaOH to pH >9 Cool	Cool 4C	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cooled to 4C
Type of Container	P	P	P	P	P	P	P	P	aG	aG
No. of Container(s)	5	1	1	1	1	1	1	1	1	4
Volume	1000mL	125mL	125mL	500mL J	500mL L	500mL M	500mL K	500mL N	500mL O	1000mL ~~G~~ F
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Tritium - H3	Carbon-14	See item (2) in Special Instructions.	Total Cyanide - 9010	Sulfides - 9030	See item (3) in Special Instructions.	TSS - 160.2; TDS - 160.1	TOC - 415.1	PCBs - 8082 FGHI

12-2-02

Sample No.	Matrix *	Sample Date	Sample Time										
J009L0	WATER	11-20-02	1140	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SSGALE	112002 1550	REF 1A	112002 1550
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
1A 3728	12-2-02 1000	R Fahlberg	12-2-02 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Fahlberg	12-2-02 1000	Fedex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fedex	12-3-02 0950		12-3-02 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.

** The laboratory is to analyze pH within 24 hours of sample receipt.

(1) Americium-241; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-228, Thorium-232}; Isotopic Uranium

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Lithium, Sodium}; Mercury - 7470 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040

Personnel not available to relinquish samples from the 3728 Ref # 1A on 12-12-02

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 2 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR	SAF No.: B03-006	
Ice Chest No.: ERC 96-001	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A-030081	Bill of Lading/Air Bill No.: 7906 4360 4281	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J009L1

Special Handling and/or Storage
Cool 4°C

Preservation	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cool 4C	None							
Type of Container	aG	aGs*	G/P	aG							
No. of Container(s)	2	3	1	1							
Volume	1000mL AB DE	40mL ABC	500mL P	250mL P							
SAMPLE ANALYSIS	Semi-VOA - 8270A (ETF)	VOA - 8260A (ETF)	Conductivity - 120.1	Ignitability - 1010							
Sample No. / Matrix * / Sample Date / Sample Time											
J009L0 / WATER / 11-20-02 / 1140	X	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SIGNATURE 112002	1550	REF 1A 112002	1550
Relinquished By/Removed From	Date/Time 1000	Received By/Stored In	Date/Time 1000
1A 3728 12.2.02		R. Fahlberg R. Fahlberg 12.2.02	
Relinquished By/Removed From ERC	Date/Time 1000	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg 12.2.02		Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	12-3-02 0950	[illegible]	12-3-02 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.
** The laboratory is to analyze pH within 24 hours of sample receipt.

Personnel not available to relinquish samples from the 3728
Ref # 1A on 12/2/02

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

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

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

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: HANFORD

Purchase Order/Project: NA

DATE: 12/3/02

CAF# / SOW# / Release #: B03-006

Laboratory SDG #: 0212L279

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 (12/3/02)	☑ 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)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

C-96-001 3°

Samples are High Base

(1) Received pH, NO3, NO2, PO4 Out of Hold and Sulfide, TDS, TSS

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

EBERLINE
SERVICES

December 23, 2002

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

Reference: **P.O. #630**
Eberline Services R2-12-012-7416, SDG H2005

Dear Ms. Kessner:

Enclosed is the data report for one water sample designated under SAF No. B03-006 received at Eberline Services on December 3, 2002. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

RECEIVED
DEC 2002

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.co

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2005 was composed of one water (treated as an other liquid) sample designated under SAF No. B03-006 with a Project Designation of: 117-DR Liquid Sampling to Support ETF Analytical Data Re. The data is in units of picoCurie per milliLiter (pCi/mL).

Sample J009L0 had a pH of 12 to 13. BHI noted the sample was probably sodium hydroxide.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 18 and 19, 2002.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.10 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

12/23/02

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 H2005

SDG	7416
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2005

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

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	12/19/02

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2005

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.

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SDG 7416
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2005

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.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

SDG 7416
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2005

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J009L0	117-DR	LIQUID		R212012-01	B03-006	B03-006-01	11/20/02 11:40
Method Blank		LIQUID		R212012-03	B03-006		
Method Blank		LIQUID		R212012-07	B03-006		
Lab Control Sample		LIQUID		R212012-02	B03-006		
Lab Control Sample		LIQUID		R212012-06	B03-006		
Duplicate (R212012-01)	117-DR	LIQUID		R212012-04	B03-006		11/20/02 11:40
Duplicate (R212012-01)	117-DR	LIQUID		R212012-08	B03-006		11/20/02 11:40

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

SAMPLE DELIVERY GROUP H2005

SDG 7416
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2005

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
7416	B03-006-01	J009L0	LIQUID		4.74 L		12/03/02	13	R212012-01	7416-001
		Method Blank	LIQUID						R212012-03	7416-003
		Method Blank	LIQUID						R212012-07	7416-007
		Lab Control Sample	LIQUID						R212012-02	7416-002
		Lab Control Sample	LIQUID						R212012-06	7416-006
		Duplicate (R212012-01)	LIQUID		4.74 L		12/03/02	13	R212012-04	7416-004
		Duplicate (R212012-01)	LIQUID		4.74 L		12/03/02	13	R212012-08	7416-008

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

SDG 7416
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2005

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	LIQUID	Americium 241 in Liquid	7052-156	5.0	1			1	1	1/1		
NP	LIQUID	Neptunium in Liquids	7052-156	5.0	1			1	1	1/1		
PU	LIQUID	Plutonium-238,239/240, Liquid	7052-156	5.0	1			1	1	1/1		
TH	LIQUID	Thorium, Isotopic in Liquid	7052-156	5.0	1			1	1	1/1		
U	LIQUID	Uranium in Liquid	7052-156	5.0	1			1	1	1/1		
Beta Counting												
SR	LIQUID	Total Strontium in Liquids	7052-156	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	LIQUID	Gamma Scan in Liquid	7052-156	10.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	LIQUID	Carbon 14 in Liquid	7052-156	10.0	1			1	1	1/1		
H	LIQUID	Tritium in Liquid	7052-156	10.0	1			1	1	1/1		
NI_L	LIQUID	Nickel-63 in Liquid	7052-156	10.0	1			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
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Form DVD-PBS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

SDG 7416
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2005

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
J009L0			R212012-01	7416-001	AM		12/15/02	12/18/02	MCM	Americium 241 in Liquid
117-DR		LIQUID	11/20/02	7416-001	C		12/14/02	12/18/02	MCM	Carbon 14 in Liquid
B03-006-01	B03-006		12/03/02	7416-001	GAM		12/16/02	12/18/02	MCM	Gamma Scan in Liquid
				7416-001	H		12/13/02	12/18/02	MCM	Tritium in Liquid
				7416-001	NI_L		12/12/02	12/19/02	MCM	Nickel-63 in Liquid
				7416-001	NP		12/16/02	12/18/02	MCM	Neptunium in Liquids
				7416-001	PU		12/17/02	12/18/02	MCM	Plutonium-238,239/240, Liquid
				7416-001	SR		12/14/02	12/18/02	MCM	Total Strontium in Liquids
				7416-001	TH		12/11/02	12/18/02	MCM	Thorium, Isotopic in Liquid
				7416-001	U		12/10/02	12/18/02	MCM	Uranium in Liquid
Method Blank			R212012-03	7416-003	AM		12/16/02	12/18/02	MCM	Americium 241 in Liquid
		LIQUID		7416-003	GAM		12/16/02	12/18/02	MCM	Gamma Scan in Liquid
	B03-006			7416-003	NI_L		12/12/02	12/19/02	MCM	Nickel-63 in Liquid
				7416-003	NP		12/17/02	12/18/02	MCM	Neptunium in Liquids
				7416-003	PU		12/17/02	12/18/02	MCM	Plutonium-238,239/240, Liquid
				7416-003	SR		12/14/02	12/18/02	MCM	Total Strontium in Liquids
				7416-003	TH		12/17/02	12/18/02	MCM	Thorium, Isotopic in Liquid
				7416-003	U		12/10/02	12/18/02	MCM	Uranium in Liquid
Method Blank			R212012-07	7416-007	C		12/14/02	12/18/02	MCM	Carbon 14 in Liquid
		LIQUID		7416-007	H		12/13/02	12/18/02	MCM	Tritium in Liquid
	B03-006									
Lab Control Sample			R212012-02	7416-002	AM		12/16/02	12/18/02	MCM	Americium 241 in Liquid
		LIQUID		7416-002	GAM		12/16/02	12/18/02	MCM	Gamma Scan in Liquid
	B03-006			7416-002	NI_L		12/12/02	12/19/02	MCM	Nickel-63 in Liquid
				7416-002	NP		12/17/02	12/18/02	MCM	Neptunium in Liquids
				7416-002	PU		12/17/02	12/18/02	MCM	Plutonium-238,239/240, Liquid
				7416-002	SR		12/14/02	12/18/02	MCM	Total Strontium in Liquids
				7416-002	TH		12/11/02	12/18/02	MCM	Thorium, Isotopic in Liquid
				7416-002	U		12/10/02	12/18/02	MCM	Uranium in Liquid
Lab Control Sample			R212012-06	7416-006	C		12/14/02	12/18/02	MCM	Carbon 14 in Liquid
		LIQUID		7416-006	H		12/14/02	12/18/02	MCM	Tritium in Liquid
	B03-006									

Lab id EBRLNE
Protocol Hanford
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Form DVD-CWS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

SDG 7416
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2005

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R212012-01)			R212012-04	7416-004	AM		12/16/02	12/18/02	MCM	Americium 241 in Liquid
117-DR		LIQUID	11/20/02	7416-004	GAM		12/17/02	12/18/02	MCM	Gamma Scan in Liquid
	B03-006		12/03/02	7416-004	NI_L		12/12/02	12/19/02	MCM	Nickel-63 in Liquid
				7416-004	NP		12/17/02	12/18/02	MCM	Neptunium in Liquids
				7416-004	PU		12/17/02	12/18/02	MCM	Plutonium-238,239/240, Liquid
				7416-004	SR		12/14/02	12/18/02	MCM	Total Strontium in Liquids
				7416-004	TH		12/11/02	12/18/02	MCM	Thorium, Isotopic in Liquid
				7416-004	U		12/10/02	12/18/02	MCM	Uranium in Liquid
Duplicate (R212012-01)			R212012-08	7416-008	C		12/14/02	12/18/02	MCM	Carbon 14 in Liquid
117-DR		LIQUID	11/20/02	7416-008	H		12/13/02	12/18/02	MCM	Tritium in Liquid
	B03-006		12/03/02							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B03-006	Americium 241 in Liquid	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
C	B03-006	Carbon 14 in Liquid	C14_COX_LSC	1			1	1	1	4
GAM	B03-006	Gamma Scan in Liquid	GAMMA_GS	1			1	1	1	4
H	B03-006	Tritium in Liquid	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	B03-006	Nickel-63 in Liquid	NI63_LSC	1			1	1	1	4
NP	B03-006	Neptunium in Liquids	NP237_LLE_PLATE_AEA	1			1	1	1	4
PU	B03-006	Plutonium-238,239/240, Liquid	PUISO_PLATE_AEA	1			1	1	1	4
SR	B03-006	Total Strontium in Liquids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TH	B03-006	Thorium, Isotopic in Liquid	THISO_IE_PLATE_AEA	1			1	1	1	4
U	B03-006	Uranium in Liquid	UISO_PLATE_AEA	1			1	1	1	4
TOTALS				10			10	10	10	40

Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-03 Method Blank

METHOD BLANK

SDG	7416	Client/Case no	Hanford	SDG_H2005	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R212012-03	Client sample id	Method Blank		
Dept sample id	7416-003	Material/Matrix		LIQUID	
		SAF No	B03-006		

ANALYTE	CAS NO	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST
Nickel 63	13981-37-8	-0.235	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	-0.071	0.11	0.25	1.0	U	SR
Thorium 228	14274-82-9	-0.012	0.046	0.013		U	TH
Thorium 230	14269-63-7	0.011	0.046	0.11	1.0	U	TH
Thorium 232	TH-232	-0.011	0.023	0.088	1.0	U	TH
Uranium 233/234	U-233/234	0.020	0.041	0.16	1.0	U	U
Uranium 235	15117-96-1	0.025	0.050	0.19	1.0	U	U
Uranium 238	U-238	0	0.041	0.16	1.0	U	U
Neptunium 237	13994-20-2	0	0.096	0.14	1.0	U	NP
Plutonium 238	13981-16-3	0	0.051	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.051	0.19	1.0	U	PU
Americium 241	14596-10-2	-0.008	0.024	0.038	1.0	U	AM
Potassium 40	13966-00-2	U		0.84		U	GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Barium 133	13981-41-4	U		0.052		U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	U		0.087	0.10	U	GAM
Radium 228	15262-20-1	U		0.33	0.20	U	GAM
Europium 152	14683-23-9	U		0.13	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	U		0.063		U	GAM
Thorium 232	TH-232	U		0.33		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM
Uranium 238	U-238	U		5.4		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

117-DR Liquid Smpl. Support ETF Anl.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
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BLANK, cont.

SDG	7416	Client/Case no	Hanford SDG H2005
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R212012-03	Client sample id	Method Blank
Dept sample id	7416-003	Material/Matrix	LIQUID
		SAF No	B03-006

QC-BLANK 43320

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-07 Method Blank

METHOD BLANK

SDG	7416	Client/Case no	Hanford SDG H2005
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R212012-07	Client sample id	Method Blank
Dept sample id	7416-007	Material/Matrix	LIQUID
		SAF No	B03-006

ANALYTE	CAS NO	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST
Tritium	10028-17-8	11.3	14	23	400	U	H
Carbon 14	14762-75-5	-20.3	15	26	50	U	C

117-DR Liquid Smpl. Support ETF Anl.

QC-BLANK 43338

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-02 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7416
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2005
Contract No. 630

Lab sample id R212012-02
Dept sample id 7416-002

Client sample id Lab Control Sample
Material/Matrix LIQUID
SAF No B03-006

ANALYTE	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST	ADDED pCi/mL	2σ ERR pCi/mL	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Nickel 63	222	4.7	2.3	30		NI_L	234	9.4	95	84-116	80-120
Total Strontium	23.9	0.98	0.30	1.0		SR	21.7	0.87	110	81-119	80-120
Thorium 230	21.6	1.7	0.088	1.0		TH	20.7	0.83	104	84-116	80-120
Uranium 233/234	18.5	1.8	0.84	1.0		U	18.9	0.76	98	83-117	80-120
Uranium 235	14.0	1.5	0.20	1.0		U	15.3	0.61	92	83-117	80-120
Uranium 238	22.4	2.0	0.80	1.0		U	20.5	0.82	109	82-118	80-120
Neptunium 237	21.6	1.9	0.12	1.0		NP	20.2	0.81	107	83-117	80-120
Plutonium 238	26.5	2.2	0.15	1.0		PU	24.8	0.99	107	83-117	80-120
Plutonium 239/240	27.8	2.3	0.15	1.0		PU	26.8	1.1	104	84-116	80-120
Americium 241	19.7	0.76	0.043	1.0		AM	19.4	0.78	102	89-111	80-120
Cobalt 60	1.55	0.11	0.084	0.050		GAM	1.70	0.068	91	82-118	80-120
Cesium 137	2.17	0.10	0.078	0.10		GAM	2.21	0.088	98	83-117	80-120

117-DR Liquid Smpl. Support ETF Anl.

QC-LCS 43319

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-06

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7416
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2005
Contract No. 630

Lab sample id R212012-06
Dept sample id 7416-006

Client sample id Lab Control Sample
Material/Matrix LIQUID
SAF No B03-006

ANALYTE	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST	ADDED pCi/mL	2σ ERR pCi/mL	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	6640	95	27	400		H	6930	280	96	84-116	80-120
Carbon 14	16200	160	39	50		C	16600	660	98	84-116	80-120

117-DR Liquid Smpl. Support ETF Anl.

QC-LCS 43337

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-04 J009L0

DUPLICATE

SDG 7416
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2005
Contract No. 630

DUPLICATE
Lab sample id R212012-04
Dept sample id 7416-004

ORIGINAL
Lab sample id R212012-01
Dept sample id 7416-001
Received 12/03/02

Client sample id J009L0
Location/Matrix 117-DR LIQUID
Collected/Volume 11/20/02 11:40 4.74 L
Custody/SAF No B03-006-01 B03-006

ANALYTE	DUPLICATE pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST	ORIGINAL pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Nickel 63	0.520	1.2	2.0	30	U	NI_L	-0.534	1.2	2.0	U	-	
Total Strontium	-0.056	0.11	0.25	1.0	U	SR	0.090	0.13	0.24	U	-	
Thorium 228	0.022	0.045	0.086		U	TH	0	0.065	0.16	U	-	
Thorium 230	0.180	0.091	0.11	1.0		TH	0.097	0.065	0.083		60	122
Thorium 232	0	0.022	0.086	1.0	U	TH	0.011	0.022	0.083	U	-	
Uranium 233/234	-0.022	0.044	0.17	1.0	U	U	0.134	0.13	0.17	U	-	
Uranium 235	0	0.053	0.20	1.0	U	U	0	0.054	0.21	U	-	
Uranium 238	0	0.044	0.17	1.0	U	U	0	0.045	0.17	U	-	
Neptunium 237	0.076	0.15	0.23	1.0	U	NP	0.035	0.035	0.048	U	-	
Plutonium 238	-0.021	0.043	0.16	1.0	U	PU	0	0.036	0.14	U	-	
Plutonium 239/240	0.043	0.043	0.16	1.0	U	PU	0	0.036	0.14	U	-	
Americium 241	-0.029	0.023	0.039	1.0	U	AM	-0.004	0.041	0.062	U	-	
Potassium 40	U		0.44		U	GAM	U		0.91	U	-	
Cobalt 60	U		0.043	0.050	U	GAM	U		0.040	U	-	
Barium 133	U		0.038		U	GAM	U		0.043	U	-	
Cesium 137	U		0.037	0.10	U	GAM	U		0.040	U	-	
Radium 226	U		0.065	0.10	U	GAM	U		0.084	U	-	
Radium 228	U		0.15	0.20	U	GAM	U		0.19	U	-	
Europium 152	U		0.089	0.10	U	GAM	U		0.10	U	-	
Europium 154	U		0.10	0.10	U	GAM	U		0.11	U	-	
Europium 155	U		0.070	0.10	U	GAM	U		0.10	U	-	
Thorium 228	U		0.051		U	GAM	U		0.054	U	-	
Thorium 232	U		0.15		U	GAM	U		0.19	U	-	
Uranium 235	U		0.11		U	GAM	U		0.16	U	-	
Uranium 238	U		4.5		U	GAM	U		5.0	U	-	
Americium 241	U		0.070		U	GAM	U		0.15	U	-	

117-DR Liquid Smpl. Support ETF Anl.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-04 J009L0

DUPLICATE, cont.

SDG 7416		Client/Case no Hanford	SDG H2005
Contact Melissa C. Mannion		Contract No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R212012-04	Lab sample id R212012-01	Client sample id J009L0	
Dept sample id 7416-004	Dept sample id 7416-001	Location/Matrix 117-DR	LIQUID
	Received 12/03/02	Collected/Volume 11/20/02 11:40	4.74 L
		Custody/SAF No B03-006-01	B03-006

QC-DUP#1 43321

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-08 J009L0

DUPLICATE

SDG	7416	Client/Case no	Hanford SDG H2005
Contact	Melissa C. Mannion	Contract	No. 630
DUPLICATE		**ORIGINAL**	
Lab sample id	R212012-08	Lab sample id	R212012-01
Dept sample id	7416-008	Dept sample id	7416-001
		Received	12/03/02
Client sample id	J009L0		
Location/Matrix	117-DR LIQUID		
Collected/Volume	11/20/02 11:40 4.74 L		
Custody/SAF No	B03-006-01 B03-006		

ANALYTE	DUPLICATE pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST	ORIGINAL pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	9.81	8.9	14	400	U	H	18.8	14	23	U	-		
Carbon 14	-7.69	9.6	16	50	U	C	-14.2	16	27	U	-		

117-DR Liquid Smpl. Support ETF Anl.

QC-DUP#1 43339

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

R212012-01 J009L0

DATA SHEET

SDG	7416	Client/Case no	Hanford	SDG H2005	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R212012-01	Client sample id	J009L0		
Dept sample id	7416-001	Location/Matrix	117-DR	LIQUID	
Received	12/03/02	Collected/Volume	11/20/02 11:40	4.74 L	
		Custody/SAF No	B03-006-01	B03-006	

ANALYTE	CAS NO	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI-FIERS	TEST
Tritium	10028-17-8	18.8	14	23	400	U	H
Carbon 14	14762-75-5	-14.2	16	27	50	U	C
Nickel 63	13981-37-8	-0.534	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.090	0.13	0.24	1.0	U	SR
Thorium 228	14274-82-9	0	0.065	0.16		U	TH
Thorium 230	14269-63-7	0.097	0.065	0.083	1.0		TH
Thorium 232	TH-232	0.011	0.022	0.083	1.0	U	TH
Uranium 233/234	U-233/234	0.134	0.13	0.17	1.0	U	U
Uranium 235	15117-96-1	0	0.054	0.21	1.0	U	U
Uranium 238	U-238	0	0.045	0.17	1.0	U	U
Neptunium 237	13994-20-2	0.035	0.035	0.048	1.0	U	NP
Plutonium 238	13981-16-3	0	0.036	0.14	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.036	0.14	1.0	U	PU
Americium 241	14596-10-2	-0.004	0.041	0.062	1.0	U	AM
Potassium 40	13966-00-2	U		0.91		U	GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Barium 133	13981-41-4	U		0.043		U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	U		0.084	0.10	U	GAM
Radium 228	15262-20-1	U		0.19	0.20	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	U		0.054		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		5.0		U	GAM
Americium 241	14596-10-2	U		0.15		U	GAM

117-DR Liquid Smpl. Support ETF Anl.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test AM Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN LIQUID
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7052-156						
J009L0	R212012-01			7416-001	U	
BLK (QC ID=43320)	R212012-03			7416-003	U	
LCS (QC ID=43319)	R212012-02			7416-002	ok	
Duplicate (R212012-01)	R212012-04			7416-004	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156 2σ prep error 5.0 % Reference Lab Notebook 7052 pg. 156																
J009L0	R212012-01			0.062	0.492			66		1166			25	12/14/02	12/15	SS-062
BLK (QC ID=43320)	R212012-03			0.038	0.492			77		1168				12/14/02	12/16	SS-064
LCS (QC ID=43319)	R212012-02			0.043	0.492			74		1168				12/14/02	12/16	SS-063
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.039	0.492			88		1168			26	12/14/02	12/16	SS-065
Nominal values and limits from method				1.0	0.492			20-105		50	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.046	±	0.022
	YIELD	76	±	18

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test NP Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN LIQUIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7052-156						
J009L0	R212012-01			7416-001	U	
BLK (QC ID=43320)	R212012-03			7416-003	U	
LCS (QC ID=43319)	R212012-02			7416-002	ok	
Duplicate (R212012-01)	R212012-04			7416-004	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156	2σ prep error 5.0 %				Reference Lab Notebook 7052 pg. 156											
J009L0	R212012-01			0.048	0.492			62		1169			26	12/12/02	12/16	SS-066
BLK (QC ID=43320)	R212012-03			0.14	0.492			57		109				12/12/02	12/17	SS-041
LCS (QC ID=43319)	R212012-02			0.12	0.492			66		109				12/12/02	12/17	SS-040
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.23	0.492			38		109			27	12/12/02	12/17	SS-042
Nominal values and limits from method				1.0	0.492			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.13	±	0.15
	YIELD	56	±	25

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test PU Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM-238,239/240, LIQUID
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7052-156								
J009L0	R212012-01			7416-001	U		U	
BLK (QC ID=43320)	R212012-03			7416-003	U		U	
LCS (QC ID=43319)	R212012-02			7416-002	ok		ok	
Duplicate (R212012-01)	R212012-04			7416-004	-	U	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156	2σ prep error 5.0 %				Reference Lab Notebook 7052 pg. 156											
J009L0	R212012-01			0.14	0.492			65		276			27	12/17/02	12/17	SS-059
BLK (QC ID=43320)	R212012-03			0.19	0.492			43		277				12/17/02	12/17	SS-061
LCS (QC ID=43319)	R212012-02			0.15	0.492			54		276				12/17/02	12/17	SS-060
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.16	0.492			57		277			27	12/17/02	12/17	SS-063
Nominal values and limits from method				1.0	0.492			20-105		50			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 4 SAMPLES				
MDA	0.16	±	0.043
YIELD	55	±	18

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test TH Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN LIQUID
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7052-156					
J009L0	R212012-01			7416-001	0.097
BLK (QC ID=43320)	R212012-03			7416-003	U
LCS (QC ID=43319)	R212012-02			7416-002	ok
Duplicate (R212012-01)	R212012-04			7416-004	ok
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156 2σ prep error 5.0 % Reference Lab Notebook 7052 pg. 156																
J009L0	R212012-01			0.083	0.492			101		256			21	12/11/02	12/11	SS-032
BLK (QC ID=43320)	R212012-03			0.11	0.492			102		277				12/11/02	12/17	SS-050
LCS (QC ID=43319)	R212012-02			0.088	0.492			103		256				12/11/02	12/11	SS-033
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.11	0.492			110		256			21	12/11/02	12/11	SS-042
Nominal values and limits from method				1.0	0.492			20-110		100	100		180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-907	Thorium in Water and Dissolved Solid Samples by TEVA and Anion Exchange Column Method, rev 2
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.098 ± 0.029
YIELD 104 ± 8

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test U Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM IN LIQUID
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2005

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 7052-156														
J009L0	R212012-01			7416-001	U		U		U					
BLK (QC ID=43320)	R212012-03			7416-003	U		U		U					
LCS (QC ID=43319)	R212012-02			7416-002	ok		ok		ok					
Duplicate (R212012-01)	R212012-04			7416-004	-	U	-	U	-	U				
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	1.0		1.0		1.0					
											Averages			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156 2σ prep error 5.0 % Reference Lab Notebook 7052 pg. 156																
J009L0	R212012-01			0.21	0.492			87		149			20	12/10/02	12/10	SS-003
BLK (QC ID=43320)	R212012-03			0.19	0.492			90		152				12/10/02	12/10	SS-032
LCS (QC ID=43319)	R212012-02			0.84	0.492			93		150				12/10/02	12/10	SS-015
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.20	0.492			91		152			20	12/10/02	12/10	SS-033
Nominal values and limits from method				1.0	0.492					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 4 SAMPLES
MDA 0.36 ± 0.64
YIELD 90 ± 5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test SR Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN LIQUIDS
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7052-156						
J009L0	R212012-01			7416-001	U	
BLK (QC ID=43320)	R212012-03			7416-003	U	
LCS (QC ID=43319)	R212012-02			7416-002	ok	
Duplicate (R212012-01)	R212012-04			7416-004	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156	2σ prep error 10.0 % Reference Lab Notebook 7052 pg. 156															
J009L0	R212012-01			0.24	0.980			90		100			24	12/14/02	12/14	GRB-217
BLK (QC ID=43320)	R212012-03			0.25	0.980			81		100				12/14/02	12/14	GRB-218
LCS (QC ID=43319)	R212012-02			0.30	0.980			79		100				12/14/02	12/14	GRB-202
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.25	0.980			86		100			24	12/14/02	12/14	GRB-219
Nominal values and limits from method				1.0	0.980					100			180			

PROCEDURES	REFERENCE	
	SRTOT_SEP_PRECIP_GPC	
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-501	Strontium in Water Samples, rev 4

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.26	±	0.054
YIELD	84	±	10

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test GAM Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN IN LIQUID
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7052-156								
J009L0	R212012-01			7416-001	U		U	
BLK (QC ID=43320)	R212012-03			7416-003	U		U	
LCS (QC ID=43319)	R212012-02			7416-002	ok		ok	
Duplicate (R212012-01)	R212012-04			7416-004	-	U	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	0.050		0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156 2σ prep error 10.0 % Reference Lab Notebook 7052 pg. 156																
J009L0	R212012-01			0.040	106					723			26	12/11/02	12/16	JR,05,00
BLK (QC ID=43320)	R212012-03			0.054	106					722				12/11/02	12/16	JR,03,00
LCS (QC ID=43319)	R212012-02			0.084	106					723				12/11/02	12/16	JR,07,00
Duplicate (R212012-01) (QC ID=43321)	R212012-04			0.043	106					407			27	12/11/02	12/17	JR,04,00
Nominal values and limits from method				0.050	106					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.055	±	0.040
YIELD		±	

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test C Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN LIQUID
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7052-156						
J009L0	R212012-01			7416-001	U	
BLK (QC ID=43338)	R212012-07			7416-007	U	
LCS (QC ID=43337)	R212012-06			7416-006	ok	
Duplicate (R212012-01)	R212012-08			7416-008	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	50	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156	2σ prep error 10.0 %				Reference Lab Notebook 7052 pg. 156											
J009L0	R212012-01			27	0.0384			100		100			24	12/13/02	12/14	LSC-006
BLK (QC ID=43338)	R212012-07			26	0.0384			100		100				12/13/02	12/14	LSC-006
LCS (QC ID=43337)	R212012-06			39	0.0384			100		43				12/13/02	12/14	LSC-006
Duplicate (R212012-01) (QC ID=43339)	R212012-08			16	0.0615			100		100			24	12/13/02	12/14	LSC-006
Nominal values and limits from method				50	0.0384					25			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	27	±	19
YIELD	100	±	0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test H Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN LIQUID
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7052-156						
J009L0	R212012-01			7416-001	U	
BLK (QC ID=43338)	R212012-07			7416-007	U	
LCS (QC ID=43337)	R212012-06			7416-006	ok	
Duplicate (R212012-01)	R212012-08			7416-008	-	U
Nominal values and limits from method 117-DR Liquid Smpl. Support ETF Anl.				RDLs (pCi/mL)	400	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156	2σ prep error 10.0 %				Reference Lab Notebook 7052 pg. 156											
J009L0	R212012-01			23	0.0384			100		120			23	12/13/02	12/13	LSC-005
BLK (QC ID=43338)	R212012-07			23	0.0384			100		120				12/13/02	12/13	LSC-005
LCS (QC ID=43337)	R212012-06			27	0.0384			100		120				12/13/02	12/14	LSC-005
Duplicate (R212012-01) (QC ID=43339)	R212012-08			14	0.0615			100		120			23	12/13/02	12/13	LSC-005
Nominal values and limits from method				400	0.0384					5			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 22 ± 11
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2005

Test NI L Matrix LIQUID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL-63 IN LIQUID
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2005

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7052-156						
J009L0	R212012-01			7416-001	U	
BLK (QC ID=43320)	R212012-03			7416-003	U	
LCS (QC ID=43319)	R212012-02			7416-002	ok	
Duplicate (R212012-01)	R212012-04			7416-004	-	U

Nominal values and limits from method RDLs (pCi/mL) 30
117-DR Liquid Smpl. Support ETF Anl.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/mL	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-156	2σ prep error 10.0 % Reference Lab Notebook 7052 pg. 156															
J009L0	R212012-01			2.0	0.492			97		100			22	12/11/02	12/12	LSC-004
BLK (QC ID=43320)	R212012-03			2.0	0.492			97		100				12/11/02	12/12	LSC-004
LCS (QC ID=43319)	R212012-02			2.3	0.492			97		77				12/11/02	12/12	LSC-004
Duplicate (R212012-01) (QC ID=43321)	R212012-04			2.0	0.492			97		100			22	12/11/02	12/12	LSC-004
Nominal values and limits from method				30	0.492					10			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-431	Nickel-63 Purification, rev 5

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	2.1	±	0.30
	YIELD	97	±	0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/02

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2005

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 12/19/02

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2005

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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Form DVD-RG
Version 3.06
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SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2005

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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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2005

DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

SDG 7416
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
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DATA SHEET

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

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

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

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REPORT GUIDE

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Case no SDG H2005

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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REPORT GUIDE

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

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

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

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2005

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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Protocol Hanford
Version Ver 1.0
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Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2005

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 12/19/02

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2005

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

* 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 7416
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2005

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
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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.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-006-01	Page 1 of 2

Collector: Jeff Gale	Company Contact: Rikki Thoren	Telephone No.: 521-8003	Project Coordinator: KESSNER, JH
Price Code: 7K	Data Turnaround: 15 days ~~21 Days~~ TAT	Air Quality ☐	
Project Designation: 117-DR Liquid Sampling to Support ETF Analytical Data Re	Sampling Location: 117-DR H2005 (7416)	SAF No.: B03-006	
Ice Chest No.: A1060	Field Logbook No.: 1584	COA: R117DR200C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 068	Bill of Lading/Air Bill No.: 7921 4325 5453	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J009L1

Special Handling and/or Storage
None

Preservation	HNO3 to pH <2	None	None	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	ZnAc+NaOH to pH >9 Cool	Cool 4C	Cool 4C	HCl or H2SO4 to pH <2 Coo	Cooled to 4C
Type of Container	P	P	P	P	P	P	P	P	aG	aG
No. of Container(s)	5	1	1	1	1	1	1	1	1	4
Volume	1000mL ✓	125mL ✓	125mL ✓	500mL ✓	500mL	500mL	500mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Tritium - H3	Carbon-14	See item (2) in Special Instructions.	Total Cyanide - 9010	Sulfides - 9030	See item (3) in Special Instructions.	TSS - 160.2; TDS - 160.1	TOC - 415.1	PCBs - 8082

Sample No.	Matrix *	Sample Date	Sample Time										
J009L0	WATER	11-20-02	1140	X	X	X	X	X	X	X	X	X	X

RB 12.2.02

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SSGALO	11/20/02 1550	RGF 1A	11/20/02 1550
1A 3728	12-2-02 1000	R. Fellows	R. Fellows 12-2-02 1000
R. Fellows	R. Fellows 12-2-02 1000	Fed Ex	
Fed Ex	12/03/02 10:30	Yamamoto	12/03/02 10:30

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 or method 9056 will not be met.
** The laboratory is to analyze pH within 24 hours of sample receipt.

(1) Americium-241; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-228, Thorium-232}; Isotopic Uranium
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Lithium, Sodium}; Mercury - 7470 - (CV)
(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040

Personnel not available to relinquish samples from the 3728
Ref # 1A on 12 12 02

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wt=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: Bechtel Hanford Date/Time received 12/3/02 10:30

CoC No. B03-006 - 01

Container I.D. No. A1060 Requested TAT (Days) 21 Day finish P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [✓]
2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [✓]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [✓]
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [✓]
5. Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: 7 (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 Ryamamoto Date: 12/03/02 Time: 10:30

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

Ion Chamber Ser. No. _____ Calibration date _____

Alpha meter Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____