0078702

SAF-RC-074
100-D/DR Burial Grounds & Remaining Sites – Soil Quick Turn
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 8/25/08
INITIAL/DATE

COMMENTS:

SDG K1278 SAF RC-074

Rad only Chem only X Rad & Chem

X Complete Partial

Waste Sites: 118-DR-1 soils with red liquid

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
2030 Wright Avenue
Richmond, California 94804-3849
Phone (510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
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August 20, 2008

Ms. Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99352

Reference: **P.O. #S00W235A00**
Eberline Services R8-07-061-7848, SDG K1278
R8-08-083-7848

Dear Ms. Kessner:

Enclosed is an updated report for one solid (soil) sample designated under SAF No. RC-074 received at Eberline Services on July 11, 2008. Results were originally reported on July 10. This report includes results for the additionally requested tritium analysis.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1278 was composed of one solid (soil) sample designated under SAF No. RC-074 with a Project Designation of: 100-D/DR Burial Grounds & Remaining Sites-Soil Quick Turn.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist included in the original report. The results were sent to WCH via e-mail on August 20, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analysis

The gross QC LCS recovery was 68%, less than the lower control limit of 80%. No other problems were encountered during the course of the analyses.

2.2 Tritium Analysis

No problems were encountered during the course of the analyses.

3.0 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 — 08/20/08

Melissa C. Mannion
Senior Program Manager

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP K1278

SDG	7848
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K1278

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

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/20/08

SDG 7848
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

LAB SAMPLE SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R807061-01	J17321	118-DR-1 soils w/red liq	SOLID		RC-074	RC-074-083	07/08/08 10:30
R807061-02	Lab Control Sample		SOLID		RC-074		
R807061-03	Method Blank		SOLID		RC-074		
R807061-04	Duplicate (R807061-01)	118-DR-1 soils w/red liq	SOLID		RC-074		07/08/08 10:30
R807061-05	Lab Control Sample		SOLID		RC-074		
R807061-06	Method Blank		SOLID		RC-074		
R807061-07	Duplicate (R807061-01)	118-DR-1 soils w/red liq	SOLID		RC-074		07/08/08 10:30

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

QC SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS RECEIVED	DAYS COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7848	RC-074-083	J17321	SOLID	97.1	28 g		07/11/08	3	R807061-01	7848-001
		Method Blank	SOLID						R807061-03	7848-003
		Method Blank	SOLID						R807061-06	7848-006
		Lab Control Sample	SOLID						R807061-02	7848-002
		Lab Control Sample	SOLID						R807061-05	7848-005
		Duplicate (R807061-01)	SOLID	97.1	28 g		07/11/08	3	R807061-04	7848-004
		Duplicate (R807061-01)	SOLID	97.1	28 g		07/11/08	3	R807061-07	7848-007

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

PREP BATCH SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Solids	6160-023	20.6	1			1	1	1/1		
93B	SOLID	Gross Beta in Solids	6160-023	11.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Solids	6160-023	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 Hanford1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

LAB WORK SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R807061-01	J17321			7848-001	93A/93		07/16/08	07/17/08	BW	Gross Alpha in Solids
07/08/08	118-DR-1 soils w/red liq		SOLID	7848-001	93B/93		07/16/08	07/17/08	BW	Gross Beta in Solids
07/11/08	RC-074-083	RC-074		7848-001	H		08/12/08	08/19/08	BW	Tritium in Solids
R807061-02	Lab Control Sample			7848-002	93A/93		07/16/08	07/17/08	BW	Gross Alpha in Solids
			SOLID	7848-002	93B/93		07/16/08	07/17/08	BW	Gross Beta in Solids
		RC-074								
R807061-03	Method Blank			7848-003	93A/93		07/17/08	07/17/08	BW	Gross Alpha in Solids
			SOLID	7848-003	93B/93		07/17/08	07/17/08	BW	Gross Beta in Solids
		RC-074								
R807061-04	Duplicate (R807061-01)			7848-004	93A/93		07/17/08	07/17/08	BW	Gross Alpha in Solids
07/08/08	118-DR-1 soils w/red liq		SOLID	7848-004	93B/93		07/17/08	07/17/08	BW	Gross Beta in Solids
07/11/08		RC-074								
R807061-05	Lab Control Sample			7848-005	H		08/12/08	08/19/08	BW	Tritium in Solids
			SOLID							
		RC-074								
R807061-06	Method Blank			7848-006	H		08/12/08	08/19/08	BW	Tritium in Solids
			SOLID							
		RC-074								
R807061-07	Duplicate (R807061-01)			7848-007	H		08/12/08	08/19/08	BW	Tritium in Solids
07/08/08	118-DR-1 soils w/red liq		SOLID							
07/11/08		RC-074								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-074	Gross Alpha in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-074	Gross Beta in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
H	RC-074	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
TOTALS				3			3	3	3	12

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-003 Method Blank

METHOD BLANK

SDG	7848	Client/Case no	Hanford SDG K1278
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R807061-03	Client sample id	Method Blank
Dept sample id	7848-003	Material/Matrix	SOLID
		SAF No	RC-074

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.32	2.5	6.53	10.0	U	93A
Gross Beta	12587-47-2	1.24	3.5	5.92	15.0	U	93B

100D/DR BurialGrnds&RemainSites-SQT

QC-BLANK #66430

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-006 Method Blank

METHOD BLANK

SDG	7848	Client/Case no	Hanford SDG K1278
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R807061-06	Client sample id	Method Blank
Dept sample id	7848-006	Material/Matrix	SOLID
		SAF No	RC-074

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.828	3.2	5.55	400	U	H

100D/DR BurialGrnds&RemainSites-SQT

QC-BLANK #66824

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-002 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7848 Client/Case no Hanford SDG K1278
Contact Melissa C. Mannion Contract No. S00W235A00

Lab sample id R807061-02 Client sample id Lab Control Sample
Dept sample id 7848-002 Material/Matrix SOLID
SAF No RC-074

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	69.6	13	5.70	10.0		93A	102	4.1	68	71-129	70-130
Gross Beta	90.4	7.1	5.56	15.0		93B	93.0	3.7	97	79-121	80-120

100D/DR BurialGrnds&RemainSites-SQT

QC-LCS #66429

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-005 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7848 Client/Case no Hanford SDG K1278

Contact Melissa C. Mannion Contract No. S00W235A00

Lab sample id R807061-05 Client sample id Lab Control Sample

Dept sample id 7848-005 Material/Matrix SOLID

SAF No RC-074

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	785	16	5.29	400		H	810	32	97	84-116	80-120

100D/DR BurialGrnds&RemainSites-SQT

QC-LCS #66823

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-004 J17321

DUPLICATE

SDG	7848			Client/Case no	Hanford SDG K1278
Contact	Melissa C. Mannion			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	R807061-04	Lab sample id	R807061-01	Client sample id	J17321
Dept sample id	7848-004	Dept sample id	7848-001	Location/Matrix	118-DR-1 soils w/red liq SOLID
		Received	07/11/08	Collected/Weight	07/08/08 10:30 28 g
% solids	97.1	% solids	97.1	Custody/SAF No	RC-074-083 RC-074

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	7.63	5.6	6.66	10.0		93A	14.4	7.0	6.37		61	130	1.4
Gross Beta	23.3	6.4	9.06	15.0		93B	25.0	6.0	8.74		7	59	0.4

100D/DR BurialGrnds&RemainSites-SQT

QC-DUP#1 66431

DUPLICATES
Page 1
SUMMARY DATA SECTION
Page 11

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-007 J17321

DUPLICATE

SDG	7848			Client/Case no	Hanford SDG K1278
Contact	Melissa C. Mannion			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	R807061-07	Lab sample id	R807061-01	Client sample id	J17321
Dept sample id	7848-007	Dept sample id	7848-001	Location/Matrix	118-DR-1 soils w/red liq SOLID
		Received	07/11/08	Collected/Weight	07/08/08 10:30 28 g
% solids	97.1	% solids	97.1	Custody/SAF No	RC-074-083 RC-074

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Tritium	-0.567	2.4	4.23	400	U	H	-0.383	2.5	4.28	U	-		0.1

100D/DR BurialGrnds&RemainSites-SQT

QC-DUP#1 66825

DUPLICATES
Page 2
SUMMARY DATA SECTION
Page 12

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-001 J17321

DATA SHEET

SDG	7848	Client/Case no	Hanford	SDG K1278	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R807061-01	Client sample id	J17321		
Dept sample id	7848-001	Location/Matrix	118-DR-1 soils w/red liq	SOLID	
Received	07/11/08	Collected/Weight	07/08/08 10:30	28 g	
% solids	97.1	Custody/SAF No	RC-074-083	RC-074	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	14.4	7.0	6.37	10.0		93A
Gross Beta	12587-47-2	25.0	6.0	8.74	15.0		93B
Tritium	10028-17-8	-0.383	2.5	4.28	400	U	H

100D/DR BurialGrnds&RemainSites-SQT

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

Test 93A Matrix SOLID
SDG 7848
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1278

RESULTS

LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Preparation batch 6160-023					
R807061-01	93		7848-001	J17321	14.4
R807061-02	93		7848-002	Lab Control Sample	LOW
R807061-03	93		7848-003	Method Blank	U
R807061-04	93		7848-004	Duplicate (R807061-01)	ok
Nominal values and limits from method 100D/DR BurialGrnds&RemainSites-SQT				RDLs (pCi/g)	10.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6160-023 2σ prep error 20.6 % Reference Lab Notebook #6160, pg. 23																
R807061-01	93		J17321	6.37	0.100			80		100			8	07/16/08	07/16	GRB-214
R807061-02	93		Lab Control Sample	5.70	0.100			60		100				07/16/08	07/16	GRB-216
R807061-03	93		Method Blank	6.53	0.100			60		100				07/16/08	07/17	GRB-105
R807061-04	93		Duplicate (R807061-01)	6.66	0.100			80		100			9	07/16/08	07/17	GRB-107
Nominal values and limits from method				10.0	0.100			5-250		100			180			

PROCEDURES
REFERENCE 900.0_ALPHABETA_GPC
SPP-073 Soil Leaching 10-200 g Aliquot, rev 0
SPP-125 Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 6.32 ± 0.854
RESIDUE 70 ± 23

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

Test 93B Matrix SOLID
SDG 7848
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1278

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
Preparation batch 6160-023					
R807061-01	93		7848-001	J17321	25.0
R807061-02	93		7848-002	Lab Control Sample	ok
R807061-03	93		7848-003	Method Blank	U
R807061-04	93		7848-004	Duplicate (R807061-01)	ok
Nominal values and limits from method 100D/DR BurialGrnds&RemainSites-SQT				RDLs (pCi/g)	15.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6160-023 2σ prep error 11.0 % Reference Lab Notebook #6160, pg. 23																
R807061-01	93		J17321	8.74	0.100			80		100			8	07/16/08	07/16	GRB-214
R807061-02	93		Lab Control Sample	5.56	0.100			60		100				07/16/08	07/16	GRB-216
R807061-03	93		Method Blank	5.92	0.100			60		100				07/16/08	07/17	GRB-105
R807061-04	93		Duplicate (R807061-01)	9.06	0.100			80		100			9	07/16/08	07/17	GRB-107
Nominal values and limits from method				15.0	0.100			5-250		100			180			

PROCEDURES
REFERENCE 900.0_ALPHABETA_GPC
SPP-073 Soil Leaching 10-200 g Aliquot, rev 0
SPP-125 Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 7.32 ± 3.67
RESIDUE 70 ± 23

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

Test H Matrix SOLID
SDG 7848
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1278

RESULTS

LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 6160-023						
R807061-01			7848-001	J17321	U	
R807061-05			7848-005	Lab Control Sample	ok	
R807061-06			7848-006	Method Blank	U	
R807061-07			7848-007	Duplicate (R807061-01)	-	U
Nominal values and limits from method 100D/DR BurialGrnds&RemainSites-SQT				RDLs (pCi/g)	400	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6160-023 2σ prep error 10.0 % Reference Lab Notebook #6160, pg. 23																
R807061-01			J17321	4.28	0.391			100		50			35	08/12/08	08/12	LSC-007
R807061-05			Lab Control Sample	5.29	0.300			100		50				08/12/08	08/12	LSC-007
R807061-06			Method Blank	5.55	0.300			100		50				08/12/08	08/12	LSC-007
R807061-07			Duplicate (R807061-01)	4.23	0.391			100		50			35	08/12/08	08/12	LSC-007
Nominal values and limits from method				400	0.300					25			180			

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 4.84 ± 1.36
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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 Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/20/08

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/20/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id EBRLNE
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SDG 7848
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/20/08

SDG 7848
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
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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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SDG 7848
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

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

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

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

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

  2. The error of ADDED.

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

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/20/08

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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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GUIDE, cont.

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DUPLICATE

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

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
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GUIDE, cont.

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MATRIX SPIKE

for the recovery.

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

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

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REPORT GUIDE

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

* 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.

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GUIDE, cont.

Client Hanford
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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

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GUIDE, cont.

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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.

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1849 K1278

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-074-083	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
D.W. Shea/Sub-contractor	D.W.Shea 521-6014	KESSNER, JH	8J 7days
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	**Sampling Location** 118-DR-1, soils with red liquid	**SAF No.** RC-074	
Ice Chest No. SML-203	**Field Logbook No.** EL-1607-4 / **COA** R18DR12600	**Method of Shipment** Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	**Offsite Property No.** See OPSC A080277	**Bill of Lading/Air Bill No.** see ospc	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive, pH between 2 & 13

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	G/P	aG	aG	G/P	G	G/P 7/10/08	G/P			
No. of Container(s)	1	2	1	1	1	1	1			
Volume	60mL 30g	60mL 30g	60mL 30g	60mL 30g	60mL 30g	5g	60mL 30g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	TOX - 9020	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Gross Alpha; Gross Beta	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
J17321	SOIL	7/8/08	1030						✓			

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWShea DWSHEA	7/8/08 1745	Fricke IB	7/8/08 1745
1060/IB 0930	JUL 10 2008	0930 MStankovich	JUL 10 2008
0930 MStankovich	JUL 10 2008	FED EX	
FED EX		07/11/08 09:30	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc}
(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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	

WCH-EE-011

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JLK 7/11/08

Client: W.C. HANFORD City MCKLAND State WA

Date/Time received 7/11/08 09:10 CoC No. RC-074-083

Container I.D. No. SHL-203 Requested TAT (Days) 7 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [Y] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [Y] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [Y]
6. Number of samples in shipping container: 1 Sample Matrix S
7. Number of containers per sample: 1 (Or see CoC _____)
8. Samples are in correct container Yes [Y] No [ ]
9. Paperwork agrees with samples? Yes [Y] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [Y] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH _____ Preservative _____
13. Describe any anomalies:

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by JLK Date: 07/11/08 Time: 09:30

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J17321	<60						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 99574 Calibration date 08MAY09

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
2030 Wright Avenue
Richmond, California 94804-3849
Phone (510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

July 18, 2008

Ms. Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99352

Reference: **P.O. #S00W235A00**
Eberline Services R8-07-061-7848, SDG K1278

Dear Ms. Kessner:

Enclosed is the data report for one solid (soil) sample designated under SAF No. RC-074 received at Eberline Services on July 11, 2008. The samples were 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
Senior Program Manager

MCM/njv

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1278 was composed of one solid (soil) sample designated under SAF No. RC-074 with a Project Designation of: 100-D/DR Burial Grounds & Remaining Sites-Soil Quick Turn.

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 WCH via e-mail on July 18, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analysis

The gross QC LCS recovery was 68%, less than the lower control limit of 80%. No other problems were encountered during the course of the analyses.

3.0 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
Senior Program Manager

07/18/08

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 K1278

SDG	7848
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K1278

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

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/18/08

SDG 7848
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

LAB SAMPLE SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R807061-01	J17321	118-DR-1 soils w/red liq	SOLID		RC-074	RC-074-083	07/08/08 10:30
R807061-02	Lab Control Sample		SOLID		RC-074		
R807061-03	Method Blank		SOLID		RC-074		
R807061-04	Duplicate (R807061-01)	118-DR-1 soils w/red liq	SOLID		RC-074		07/08/08 10:30

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

QC SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

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
7848	RC-074-083	J17321	SOLID	97.1	28 g		07/11/08	3	R807061-01	7848-001
		Method Blank	SOLID						R807061-03	7848-003
		Lab Control Sample	SOLID						R807061-02	7848-002
		Duplicate (R807061-01)	SOLID	97.1	28 g		07/11/08	3	R807061-04	7848-004

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

PREP BATCH SUMMARY

SDG 7848
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Solids	6160-023	20.6	1			1	1	1/1		
93B	SOLID	Gross Beta in Solids	6160-023	11.0	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 Hanford1
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

SDG 7848
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1278

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R807061-01	J17321			7848-001	93A/93		07/16/08	07/17/08	BW	Gross Alpha in Solids
07/08/08	118-DR-1 soils w/red liq		SOLID	7848-001	93B/93		07/16/08	07/17/08	BW	Gross Beta in Solids
07/11/08	RC-074-083	RC-074								
R807061-02	Lab Control Sample			7848-002	93A/93		07/16/08	07/17/08	BW	Gross Alpha in Solids
			SOLID	7848-002	93B/93		07/16/08	07/17/08	BW	Gross Beta in Solids
		RC-074								
R807061-03	Method Blank			7848-003	93A/93		07/17/08	07/17/08	BW	Gross Alpha in Solids
			SOLID	7848-003	93B/93		07/17/08	07/17/08	BW	Gross Beta in Solids
		RC-074								
R807061-04	Duplicate (R807061-01)			7848-004	93A/93		07/17/08	07/17/08	BW	Gross Alpha in Solids
07/08/08	118-DR-1 soils w/red liq		SOLID	7848-004	93B/93		07/17/08	07/17/08	BW	Gross Beta in Solids
07/11/08		RC-074								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-074	Gross Alpha in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-074	Gross Beta in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
TOTALS				2			2	2	2	8

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-003 Method Blank

METHOD BLANK

SDG	7848	Client/Case no	Hanford SDG K1278
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R807061-03	Client sample id	Method Blank
Dept sample id	7848-003	Material/Matrix	SOLID
		SAF No	RC-074

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.32	2.5	6.53	10.0	U	93A
Gross Beta	12587-47-2	1.24	3.5	5.92	15.0	U	93B

100D/DR BurialGrnds&RemainSites-SQT

QC-BLANK #66430

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7848 | Client/Case no Hanford | SDG K1278

Contact Melissa C. Mannion | Contract No. S00W235A00

Lab sample id R807061-02 | Client sample id Lab Control Sample

Dept sample id 7848-002 | Material/Matrix | SOLID

SAF No RC-074

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	69.6	13	5.70	10.0		93A	102	4.1	68	71-129	70-130
Gross Beta	90.4	7.1	5.56	15.0		93B	93.0	3.7	97	79-121	80-120

100D/DR BurialGrnds&RemainSites-SQT

QC-LCS #66429

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-004 J17321

DUPLICATE

SDG	7848			Client/Case no	Hanford SDG K1278
Contact	Melissa C. Mannion			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	R807061-04	Lab sample id	R807061-01	Client sample id	J17321
Dept sample id	7848-004	Dept sample id	7848-001	Location/Matrix	118-DR-1 soils w/red liq SOLID
		Received	07/11/08	Collected/Weight	07/08/08 10:30 28 g
% solids	97.1	% solids	97.1	Custody/SAF No	RC-074-083 RC-074

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	7.63	5.6	6.66	10.0		93A	14.4	7.0	6.37		61	130	1.4
Gross Beta	23.3	6.4	9.06	15.0		93B	25.0	6.0	8.74		7	59	0.4

100D/DR BurialGrnds&RemainSites-SQT

QC-DUP#1 66431

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

7848-001 J17321

DATA SHEET

SDG	7848	Client/Case no	Hanford	SDG K1278	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R807061-01	Client sample id	J17321		
Dept sample id	7848-001	Location/Matrix	118-DR-1 soils w/red liq	SOLID	
Received	07/11/08	Collected/Weight	07/08/08 10:30	28 g	
% solids	97.1	Custody/SAF No	RC-074-083	RC-074	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	14.4	7.0	6.37	10.0		93A
Gross Beta	12587-47-2	25.0	6.0	8.74	15.0		93B

100D/DR BurialGrnds&RemainSites-SQT

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

Test 93A Matrix SOLID
SDG 7848
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1278

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Preparation batch 6160-023					
R807061-01	93		7848-001	J17321	14.4
R807061-02	93		7848-002	Lab Control Sample	LOW
R807061-03	93		7848-003	Method Blank	U
R807061-04	93		7848-004	Duplicate (R807061-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	10.0
100D/DR BurialGrnds&RemainSites-SQT					

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6160-023 2σ prep error 20.6 % Reference Lab Notebook #6160, pg. 23																
R807061-01	93		J17321	6.37	0.100			80		100			8	07/16/08	07/16	GRB-214
R807061-02	93		Lab Control Sample	5.70	0.100			60		100				07/16/08	07/16	GRB-216
R807061-03	93		Method Blank	6.53	0.100			60		100				07/16/08	07/17	GRB-105
R807061-04	93		Duplicate (R807061-01)	6.66	0.100			80		100			9	07/16/08	07/17	GRB-107
Nominal values and limits from method				10.0	0.100			5-250		100			180			

PROCEDURES
REFERENCE 900.0_ALPHABETA_GPC
SPP-061 Determination of Moisture Content in Solid Samples rev 0
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
SPP-125 Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 6.32 ± 0.854
RESIDUE 70 ± 23

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

Test 93B Matrix SOLID
SDG 7848
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1278

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
Preparation batch 6160-023					
R807061-01	93		7848-001	J17321	25.0
R807061-02	93		7848-002	Lab Control Sample	ok
R807061-03	93		7848-003	Method Blank	U
R807061-04	93		7848-004	Duplicate (R807061-01)	ok
Nominal values and limits from method 100D/DR BurialGrnds&RemainSites-SQT				RDLs (pCi/g)	15.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6160-023 2σ prep error 11.0 % Reference Lab Notebook #6160, pg. 23																
R807061-01	93		J17321	8.74	0.100			80		100			8	07/16/08	07/16	GRB-214
R807061-02	93		Lab Control Sample	5.56	0.100			60		100				07/16/08	07/16	GRB-216
R807061-03	93		Method Blank	5.92	0.100			60		100				07/16/08	07/17	GRB-105
R807061-04	93		Duplicate (R807061-01)	9.06	0.100			80		100			9	07/16/08	07/17	GRB-107
Nominal values and limits from method				15.0	0.100			5-250		100			180			

PROCEDURES
REFERENCE 900.0_ALPHABETA_GPC
SPP-061 Determination of Moisture Content in Solid Samples rev 0
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
SPP-125 Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 7.32 ± 3.67
RESIDUE 70 ± 23

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/18/08

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

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Protocol Hanford1
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SDG 7848
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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
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PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1278

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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
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DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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GUIDE, cont.

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

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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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SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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

Client Hanford
Contract No. S00W235A00
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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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/18/08

SDG 7848
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

DUPLICATE

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

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

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

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

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

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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/18/08

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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 Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/18/08

SDG 7848
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
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SDG 7848
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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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.

Lab id EBRLNE
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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

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

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SDG 7848
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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1278

METHOD SUMMARY

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

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

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/18/08

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-074-083	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
D.W. Shea/Sub-contractor	D.W.Shea 521-6014	KESSNER, JH	8J 7days
Project Designation	**Sampling Location**	**SAF No.**	
100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	118-DR-1, soils with red liquid K1278 (7848)	RC-074	
Ice Chest No.	**Field Logbook No.** / **COA**	**Method of Shipment**	
SML-203	EL-1607-4 / R18DR12600	Fed Ex	
Shipped To	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
EBERLINE SERVICES / LIONVILLE	See OPSC A080277	see ospc	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive, pH between 12 & 13

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	G/P	aG	aG	G/P	G	G/P 7/10/08	G/P			
No. of Container(s)	1	~~1~~ 2	1	1	1	1 ~~1~~	1			
Volume	~~40~~mL 30g	~~40~~mL 30g	~~40~~mL 30g	~~40~~mL 30g	~~40~~mL 30g	5g	~~40~~ml 30g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	TOX - 9020	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Gross Alpha; Gross Beta	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
J17321	SOIL	7/8/08	1030		7/8/08			✓	7/8/08			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWShea DWShea	7/8/08 1745	Fricke JB	7/8/08 1745
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
1060/JB 0930	JUL 10 2008	MStankovich	0930 JUL 10 2008
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MStankovich	0930 JUL 10 2008	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex			07/11/08 09:10
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

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc}

(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

WCH-EE-011

EBERLINE

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JK 7/11/08

Client: W.C. HANFORD City MCCLELAND State WA

Date/Time received 7/11/08 09:10 CoC No. RC-074-083

Container I.D. No. SHL-203 Requested TAT (Days) 7 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [Y] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [Y] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [Y]
6. Number of samples in shipping container: 1 Sample Matrix S
7. Number of containers per sample: 1 (Or see CoC _____)
8. Samples are in correct container Yes [Y] No [ ]
9. Paperwork agrees with samples? Yes [Y] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH _____ Preservative _____
13. Describe any anomalies:

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by _____ Date: 07/11/08 Time: 10:30

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J17321	<60						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 99574 Calibration date 08 MAY 09

LIONVILLE LABORATORY INC.

7 August 2008

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

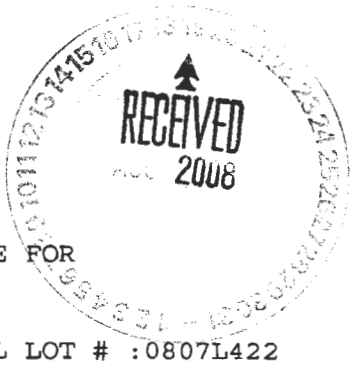
Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0807L422
SDG #	K1278
SAF #	RC-074
Date Received	7/11/08
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager
r:\group\pm\orlette\tnu-hanford\data\b_ltrs.doc



Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17321	001	S	08LE0330	07/08/08	07/14/08	07/18/08
LAB QC:						
SBLKWE	MB1	S	08LE0330	N/A	07/14/08	07/17/08
SBLKWE	MB1 BS	S	08LE0330	N/A	07/14/08	07/17/08

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-074
LVL #: 0807L422
SDG/SAF # K1278 / RC-074

W.O. #: 11343-606-001-9999-00
Date Received: 07-11-2008

SEMIVOLATILE

One (1) soil sample was collected on 07-08-2008.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 07-14-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 07-17-2008.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. The sample was extracted and analyzed within required hold time.
2. Non-target compounds were detected in these samples.
3. Samples J17321 required a 2-fold dilution due to the nature of the sample (dark).
4. One (1) of eighteen (18) surrogate recoveries were outside acceptance criteria. However, surrogate recovery acceptance criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
5. Two (2) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. The method blank was below the reporting limit for all target compounds.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. Internal standard area and retention time criteria were met.

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

LIONVILLE LABORATORY INC.

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

10. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/21/08
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08m5162

Initiator: Sharon Saylor
Date: 7-18-08
Client: The Hartford Re

Batch: 0807L422
Samples: 85
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: 08LE0330

OM 1c1278

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)

low recovery of 2,4-dinitrophenol & 4,6-dinitro-2-methylphenol in the BS

2. Known or Probable Causes(s) Acidic phenols are subject to erratic chromatographic behavior especially if the GC system is contaminated with high boiling material

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: 7/18/08

✓ 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: KDS 7-19-08 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 for diposition.

Route
__ Lab Manager: Daniels
1 Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
2 MS BNA: Garden / _____
__ Other: _____

GLOSSARY

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

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

GLOSSARY

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **0807L422** Client: **TNUHANFORD RC-074 K1278** Work Order: 11343606001 Report Date: 07/18/08 14:59 Page: 1a

00000000

		Cust ID:	J17321		SBLKWE		SBLKWE BS	
Sample Information		RFW#:	001		08LE0330-MB1		08LE0330-MB1	
		Matrix:	SOIL		SOIL		SOIL	
		D.F.:	2.00		1.00		1.00	
		Units:	ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5		93	%	107	%	80	%
	2-Fluorobiphenyl		100	%	107	%	91	%
	Terphenyl-d14		135	%	143 *	%	119	%
	Phenol-d5		77	%	107	%	88	%
	2-Fluorophenol		89	%	108	%	92	%
	2,4,6-Tribromophenol		35	%	74	%	72	%
Phenol			680	U	330	U	79	%
bis(2-Chloroethyl)ether			680	U	330	U	67	%
2-Chlorophenol			680	U	330	U	83	%
1,3-Dichlorobenzene			680	U	330	U	79	%
1,4-Dichlorobenzene			680	U	330	U	80	%
1,2-Dichlorobenzene			680	U	330	U	84	%
2-Methylphenol			680	U	330	U	68	%
2,2'-oxybis(1-Chloropropane)			680	U	330	U	69	%
3/4 Methylphenol			680	U	330	U	81	%
N-Nitroso-di-n-propylamine			680	U	330	U	76	%
Hexachloroethane			680	U	330	U	73	%
Nitrobenzene			680	U	330	U	70	%
Isophorone			680	U	330	U	73	%
2-Nitrophenol			680	U	330	U	78	%
2,4-Dimethylphenol			680	U	330	U	71	%
bis(2-Chloroethoxy)methane			680	U	330	U	74	%
2,4-Dichlorophenol			680	U	330	U	80	%
1,2,4-Trichlorobenzene			680	U	330	U	77	%
Naphthalene			680	U	330	U	81	%
4-Chloroaniline			680	U	330	U	65	%
Hexachlorobutadiene			680	U	330	U	80	%
4-Chloro-3-methylphenol			680	U	330	U	85	%
2-Methylnaphthalene			680	U	330	U	83	%
Hexachlorocyclopentadiene			680	U	330	U	59	%
2,4,6-Trichlorophenol			680	U	330	U	76	%
2,4,5-Trichlorophenol			1700	U	830	U	88	%

*= Outside of EPA CLP QC limits.

	Cust ID:	J17321		SBLKWE		SBLKWE BS		
	RFW#:	001		08LE0330-MB1		08LE0330-MB1		
2-Chloronaphthalene		680	U	330	U	82		%
2-Nitroaniline		1700	U	830	U	91		%
Dimethylphthalate		680	U	330	U	93		%
Acenaphthylene		680	U	330	U	86		%
2,6-Dinitrotoluene		680	U	330	U	92		%
3-Nitroaniline		1700	U	830	U	93		%
Acenaphthene		680	U	330	U	86		%
2,4-Dinitrophenol		1700	U	830	U	15	*	%
4-Nitrophenol		1700	U	830	U	98		%
Dibenzofuran		680	U	330	U	90		%
2,4-Dinitrotoluene		680	U	330	U	105		%
Diethylphthalate		680	U	330	U	98		%
4-Chlorophenyl-phenylether		680	U	330	U	91		%
Fluorene		680	U	330	U	94		%
4-Nitroaniline		1700	U	830	U	102		%
4,6-Dinitro-2-methylphenol		1700	U	830	U	27	*	%
N-Nitrosodiphenylamine (1)		680	U	330	U	67		%
4-Bromophenyl-phenylether		680	U	330	U	72		%
Hexachlorobenzene		680	U	330	U	86		%
Pentachlorophenol		1700	U	830	U	52		%
Phenanthrene		680	U	330	U	92		%
Anthracene		680	U	330	U	89		%
Carbazole		680	U	330	U	98		%
Di-n-butylphthalate		680	U	20	J	91		%
Fluoranthene		680	U	330	U	102		%
Pyrene		680	U	330	U	98		%
Butylbenzylphthalate		680	U	330	U	97		%
3,3'-Dichlorobenzidine		680	U	330	U	78		%
Benzo(a)anthracene		680	U	330	U	96		%
Chrysene		680	U	330	U	94		%
bis(2-Ethylhexyl)phthalate		510	JB	150	J	94		%
Di-n-octyl phthalate		680	U	330	U	95		%
Benzo(b)fluoranthene		680	U	330	U	88		%
Benzo(k)fluoranthene		680	U	330	U	90		%
Benzo(a)pyrene		680	U	330	U	90		%
Indeno(1,2,3-cd)pyrene		680	U	330	U	92		%
Dibenz(a,h)anthracene		680	U	330	U	94		%
Benzo(g,h,i)perylene		680	U	330	U	90		%

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J17321

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

Client: TNUHANFORD RC-074 K1278

Matrix: (soil/water) SOIL

Lab Sample ID: 0807L422-001

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

Lab File ID: N071711

Level: (low/med) LOW

Date Received: 07/11/08

% Moisture: 2 decanted: (Y/N)

Date Extracted: 07/14/08

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/18/08

Injection Volume: 2.0(uL)

Dilution Factor: 2.00

GPC Cleanup: (Y/N) N

pH:

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	5.467	600	J
2.		ALDOL CONDENSATE	5.929	800	JAB
3.		ALDOL CONDENSATE	6.444	70000	JAB
4.		UNKNOWN	6.496	40000	JB
5.		UNKNOWN	20.563	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKWE

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

Client: TNUHANFORD RC-074 K1278

Matrix: (soil/water) SOIL

Lab Sample ID: 08LE0330-MB1

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

Lab File ID: N071709

Level: (low/med) LOW

Date Received: 07/14/08

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

Date Extracted: 07/14/08

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/17/08

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALDOL CONDENSATE	6.019	500	JA
2.		ALDOL CONDENSATE	6.455	30000	JA
3.		UNKNOWN	6.577	30000	J
4.		ALDOL CONDENSATE	7.728	200	JA
5.		UNKNOWN	20.565	400	J

onville Laboratory Use Only

18076 422

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000012

ent TNU HANFORD SAF# BC-074

t. Final Proj. Sampling Date

oject# 11343-606-001-9999-00

oject Contact/Phone#

nville Laboratory Project Manager O-JOHNSON

SW846 Del STD TAT 7-days

te Rec'd 7-11-08 Date Due 7-18-08

		A	B				C	D	E		F				
Refrigerator #															
#/Type Container	Liquid / Solid		2G				1G	1G	1G	1	1G	1			
Volume			30g			1	30g	30g	30g	1	30g	1			
Preservatives			—				—	—	—	1	—	1			
ANALYSES REQUESTED →			ORGANIC				TOX	INORG		SW	IC	PH			
			VOA	BNA	Pest/PCB	Herb		Metal							

TRIX CES: Soil, Sediment, Solid, Sludge, Water, Oil, Air, Drum Solids, Drum Liquids, EP/TCLP Leachate, Wipe, Other, Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only												
								8625 HT				TOX FIELD	Metal	ICNTO	ISFO	ICO	IPH			
	001	J17321	/	/	Soil	7-8-08	1030	X				X	X	X	X	X	X			

Special Instructions: HSL +

metO = Bi, B, Mo, P, Li, Si, Sr, Sn, U,

IcO = Br, Cl, F, SO4, PO4, NO2, NO3

Special Instructions:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
DEC	J Hennessy	7/11/08	0940

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		COMPOSITE WASTE	

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-074-083 Page 1 of 1

Collector: D.W. Shea/Sub-contractor	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8J	Data Turnaround: 7days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	Sampling Location: 118-DR-1, soils with red liquid		SAF No.: RC-074
Ice Chest No. -	Field Logbook No.: EL-1607-4	COA: R18DR12600	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: See OPSC		Bill of Lading/Air Bill No.

POSSIBLE SAMPLE HAZARDS/REMARKS: Potentially radioactive, pH between 12 & 13

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	G/P	aG	aG	G/P	G	G/P	G/P			
No. of Container(s)	1	2	1	1	1	1	1			
Volume	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	5g	~~60mL~~ 30g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	TOX - 9020	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Gross Alpha; Gross Beta	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
17321	SOIL	7/8/08	1030	✓	✓	✓	✓	✓	7/14/08			

CHAIN OF POSSESSION

Sign/Print Names	Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
	DWShea DWShea	7/8/08 1745	Fridge 1B	7/8/08 1745
	260/1B 0930	JUL 10 2008	0930 MStankoach	JUL 10 2008
	MStankoach WCH	JUL 10 2008	FedEx	
	FedEx	7-11-08 0940	[illegible]	7-11-08 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc] and Hg via CVAA

(2) RCF GEA Shipping Screen [Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

JWS JWS

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
O=Other

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

CH-EE-011

00000013

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD Date: 7/11/08

Project/SAF/SOW/Release #: RC-074

LvLI Batch #: 0807C422 Sample Custodian: Vicki Hennig

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier: FED EX		Airbill # 7919 2758 9827
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 4.3	°C	Cooler # ERC-02-003
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

LvLI LIONVILLE LABORATORY INC.

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17321						
SILVER, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
SILVER, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
SILVER, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
ALUMINUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
ALUMINUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
ALUMINUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
ARSENIC, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
ARSENIC, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
ARSENIC, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
BORON, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
BORON, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
BORON, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
BARIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
BARIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
BARIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
BERYLLIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
BERYLLIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
BERYLLIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
BISMUTH, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
BISMUTH, TOTAL REP	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
BISMUTH, TOTAL SPIKE	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
CALCIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
CALCIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
CALCIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
CADMIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
CADMIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
CADMIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
COBALT, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
COBALT, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
COBALT, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
CHROMIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
CHROMIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
CHROMIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
COPPER, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
COPPER, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
IRON, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
IRON, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
IRON, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
MERCURY, TOTAL	001	S	08C0129	07/08/08	07/14/08	07/16/08
MERCURY, TOTAL	001 REP	S	08C0129	07/08/08	07/14/08	07/16/08
MERCURY, TOTAL	001 MS	S	08C0129	07/08/08	07/14/08	07/16/08
POTASSIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/17/08
POTASSIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/17/08
POTASSIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/17/08
LITHIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
LITHIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
LITHIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
MAGNESIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
MAGNESIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
MAGNESIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
MANGANESE, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
MANGANESE, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
MANGANESE, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
MOLYBDENUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
MOLYBDENUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
MOLYBDENUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
SODIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/17/08
SODIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/17/08
SODIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/17/08
NICKEL, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
NICKEL, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
NICKEL, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
PHOSPHORUS, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/17/08
PHOSPHORUS, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/17/08
PHOSPHORUS, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/17/08
LEAD, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
LEAD, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
LEAD, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
ANTIMONY, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
ANTIMONY, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
ANTIMONY, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
SELENIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
SELENIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
SILICON, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
SILICON, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
SILICON, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
TIN, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
TIN, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
TIN, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
STRONTIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
STRONTIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
STRONTIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
THALLIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
THALLIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
THALLIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
URANIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
URANIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
URANIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
VANADIUM, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
VANADIUM, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
VANADIUM, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08
ZINC, TOTAL	001	S	08L0269	07/08/08	07/16/08	07/16/08
ZINC, TOTAL	001 REP	S	08L0269	07/08/08	07/16/08	07/16/08
ZINC, TOTAL	001 MS	S	08L0269	07/08/08	07/16/08	07/16/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
SILVER, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
ALUMINUM LABORTORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
ALUMINUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
ARSENIC LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
ARSENIC, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
BORON LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
BORON, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
BARIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
BARIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
BERYLLIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BISMUTH, LCS	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
BISMUTH, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
CALCIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
CALCIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
CADMIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
CADMIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
COBALT LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
COBALT, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
CHROMIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
CHROMIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
COPPER LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
COPPER, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
IRON LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
IRON, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
MERCURY LABORATORY	LC1 BS	S	08C0129	N/A	07/14/08	07/15/08
MERCURY, TOTAL	MB1	S	08C0129	N/A	07/14/08	07/15/08
POTASSIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/17/08
POTASSIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/17/08
LITHIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
LITHIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
MAGNESIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
MANGANESE LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
MANGANESE, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
MOLYBDENUM LABORATOR	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
MOLYBDENUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
SODIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/17/08
SODIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/17/08
NICKEL LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
NICKEL, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
PHOSPHORUS LCS	LC1 BS	S	08L0269	N/A	07/16/08	07/17/08
PHOSPHORUS, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/17/08
LEAD LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
LEAD, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
ANTIMONY LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
ANTIMONY, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
SELENIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
SELENIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILICON LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
SILICON, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
TIN LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
TIN, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
STRONTIUM LCS STANDA	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
STRONTIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
THALLIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
THALLIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
URANIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
URANIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
VANADIUM LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
VANADIUM, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08
ZINC LABORATORY	LC1 BS	S	08L0269	N/A	07/16/08	07/16/08
ZINC, TOTAL	MB1	S	08L0269	N/A	07/16/08	07/16/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-074
LVL#: 0807L422
SDG/SAF#: K1278/RC-074

W.O.#: 11343-606-001-9999-00
Date Received: 07-11-08

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

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

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

   All analytes, with the exception of Potassium, Sodium and Phosphorous were reported with 3-fold dilutions for ICP metals due to sample matrix. The sample for Mercury was reported with a 3-fold dilution due to high concentration.

   The sample was run on a different instrument for Phosphorous.

3. All analyses were performed within the required holding times.

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of Potassium and Sodium in file TA0716A. The sample was rerun and reported for Potassium and Sodium from file PS0717A along with Phosphorous.

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

6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), samples were greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon (4.5%). Sample results for Silicon may be biased low. Refer to the Inorganics Laboratory Control Standards Report.

9. The matrix spike (MS) recoveries for 7 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

10. 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
J17321	Antimony	300	107.1
	Calcium	66,000	98.2
	Iron	66,000	95.2
	Manganese	3,000	106.3
	Sodium	40,000	97.5
	Silicon	6,300	100.2

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

LVLI
LIONVILLE LABORATORY INC.

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

7/22/08
Date

alm/m07-422

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

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

Lot#: 0807C422

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: Phosphorous Method: 6010B

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Flame AA.

4. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17321	Silver, Total	0.31 u	MG/KG	0.31	3.0
		Aluminum, Total	5900	MG/KG	12.2	3.0
		Arsenic, Total	3.4	MG/KG	1.5	3.0
		Boron, Total	3.2	MG/KG	1.5	3.0
		Barium, Total	73.6	MG/KG	0.31	3.0
		Beryllium, Total	0.38	MG/KG	0.15	3.0
		Bismuth, Total	1.8 u	MG/KG	1.8	3.0
		Calcium, Total	6780	MG/KG	12.2	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	8.5	MG/KG	0.61	3.0
		Chromium, Total	9.3	MG/KG	0.61	3.0
		Copper, Total	17.9	MG/KG	0.61	3.0
		Iron, Total	23600	MG/KG	13.7	3.0
		Mercury, Total	2.6	MG/KG	0.03	3.0
		Potassium, Total	1200	MG/KG	50.1	1.0
		Lithium, Total	6.3	MG/KG	0.12	3.0
		Magnesium, Total	4040	MG/KG	7.6	3.0
		Manganese, Total	337	MG/KG	0.12	3.0
		Molybdenum, Total	0.92 u	MG/KG	0.92	3.0
		Sodium, Total	10700	MG/KG	2.0	1.0
		Nickel, Total	11.8	MG/KG	0.61	3.0
		Phosphorus, Total	882	MG/KG	5.1	1.0
		Lead, Total	11.4	MG/KG	0.92	3.0
		Antimony, Total	0.92 u	MG/KG	0.92	3.0
		Selenium, Total	1.8 u	MG/KG	1.8	3.0
		Silicon, Total	328	MG/KG	12.2	3.0
		Tin, Total	1.8 u	MG/KG	1.8	3.0
		Strontium, Total	28.1	MG/KG	0.09	3.0
		Thallium, Total	1.8 u	MG/KG	1.8	3.0
		Uranium, Total	6.1 u	MG/KG	6.1	3.0
		Vanadium, Total	49.0	MG/KG	0.43	3.0
		Zinc, Total	72.0	MG/KG	1.8	3.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/18/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0269-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	4.0 u	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.54	MG/KG	0.50	1.0
		Barium, Total	0.16	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Bismuth, Total	0.60 u	MG/KG	0.60	1.0
		Calcium, Total	36.5	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Iron, Total	4.5 u	MG/KG	4.5	1.0
		Potassium, Total	49.3 u	MG/KG	49.3	1.0
		Lithium, Total	0.10	MG/KG	0.04	1.0
		Magnesium, Total	12.2	MG/KG	2.5	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	38.9	MG/KG	2.0	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Phosphorus, Total	5.0 u	MG/KG	5.0	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Silicon, Total	4.0 u	MG/KG	4.0	1.0
		Tin, Total	0.60 u	MG/KG	0.60	1.0
		Strontium, Total	0.25	MG/KG	0.03	1.0
		Thallium, Total	0.60 u	MG/KG	0.60	1.0
		Uranium, Total	2.0 u	MG/KG	2.0	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.60 u	MG/KG	0.60	1.0
BLANK1	08C0129-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/18/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17321	Silver, Total	5.6	0.31u	5.0	112.0	3.0
		Aluminum, Total	6130	5900	202	115.3*	3.0
		Arsenic, Total	196	3.4	202	95.4	3.0
		Boron, Total	97.9	3.2	101	93.9	3.0
		Barium, Total	263	73.6	202	93.9	3.0
		Beryllium, Total	5.2	0.38	5.0	96.5	3.0
		Bismuth, Total	492	1.8 u	504	97.6	3.0
		Calcium, Total	8250	6780	2520	58.4	3.0
		Cadmium, Total	5.1	0.15u	5.0	102.0	3.0
		Cobalt, Total	56.6	8.5	50.4	95.4	3.0
		Chromium, Total	27.8	9.3	20.2	91.6	3.0
		Copper, Total	41.5	17.9	25.2	93.7	3.0
		Iron, Total	21500	23600	101	-2100. *	3.0
		Mercury, Total	2.5	2.6	0.15	-29. *	3.0
		Potassium, Total	3300	1200	2520	83.2	1.0
		Lithium, Total	110	6.3	101	103.3	3.0
		Magnesium, Total	6170	4040	2520	84.5	3.0
		Manganese, Total	360	337	50.4	44.8*	3.0
		Molybdenum, Total	95.5	0.92u	101	94.7	3.0
		Sodium, Total	11600	10700	2520	35.2*	1.0
		Nickel, Total	59.1	11.8	50.4	93.8	3.0
		Phosphorus, Total	1270	882	504	77.9	1.0
		Lead, Total	58.4	11.4	50.4	93.3	3.0
		Antimony, Total	28.9	0.92u	50.4	57.3	3.0
		Selenium, Total	170	1.8 u	202	84.6	3.0
		Silicon, Total	632	328	101	301.5	3.0
		Tin, Total	96.4	1.8 u	101	95.6	3.0
		Strontium, Total	125	28.1	101	95.8	3.0
		Thallium, Total	193	1.8 u	202	95.7	3.0
		Uranium, Total	499	6.1 u	504	99.0	3.0
		Vanadium, Total	89.4	49.0	50.4	80.2	3.0
		Zinc, Total	114	72.0	50.4	82.9	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/18/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17321	Silver, Total	0.31u	0.27u	NC	3.0
		Aluminum, Total	5900	5340	10.0	3.0
		Arsenic, Total	3.4	3.7	8.5	3.0
		Boron, Total	3.2	2.3	32.7	3.0
		Barium, Total	73.6	67.7	8.4	3.0
		Beryllium, Total	0.38	0.35	8.1	3.0
		Bismuth, Total	1.8 u	2.3	NC	3.0
		Calcium, Total	6780	6430	5.3	3.0
		Cadmium, Total	0.15u	0.19	NC	3.0
		Cobalt, Total	8.5	8.2	3.6	3.0
		Chromium, Total	9.3	9.1	2.2	3.0
		Copper, Total	17.9	16.6	7.5	3.0
		Iron, Total	23600	24100	2.0	3.0
		Mercury, Total	2.6	2.2	13.9	3.0
		Potassium, Total	1200	1050	13.1	1.0
		Lithium, Total	6.3	5.6	11.8	3.0
		Magnesium, Total	4040	3850	4.9	3.0
		Manganese, Total	337	314	7.2	3.0
		Molybdenum, Total	0.92u	0.85	NC	3.0
		Sodium, Total	10700	9670	10.5	1.0
		Nickel, Total	11.8	12.3	4.1	3.0
		Phosphorus, Total	882	890	0.94	1.0
		Lead, Total	11.4	10.7	6.3	3.0
		Antimony, Total	0.92u	0.82u	NC	3.0
		Selenium, Total	1.8 u	1.6 u	NC	3.0
		Silicon, Total	328	354	7.6	3.0
		Tin, Total	1.8 u	1.6 u	NC	3.0
		Strontium, Total	28.1	28.5	1.4	3.0
		Thallium, Total	1.8 u	1.6 u	NC	3.0
		Uranium, Total	6.1 u	5.5 u	NC	3.0
		Vanadium, Total	49.0	43.9	11.0	3.0
		Zinc, Total	72.0	70.6	2.0	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/18/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0269-LC1	Silver, LCS	47.8	50.0	MG/KG	95.6
		Aluminum, LCS	503	500	MG/KG	100.5
		Arsenic, LCS	938	1000	MG/KG	93.8
		Boron, LCS	470	500	MG/KG	93.9
		Barium, LCS	485	500	MG/KG	97.0
		Beryllium, LCS	24.5	25.0	MG/KG	98.0
		Bismuth, LCS	476	500	MG/KG	95.2
		Calcium, LCS	2460	2500	MG/KG	98.5
		Cadmium, LCS	23.5	25.0	MG/KG	94.0
		Cobalt, LCS	238	250	MG/KG	95.0
		Chromium, LCS	49.6	50.0	MG/KG	99.2
		Copper, LCS	124	125	MG/KG	99.2
		Iron, LCS	480	500	MG/KG	95.9
		Potassium, LCS	2110	2500	MG/KG	84.3
		Lithium, LCS	513	500	MG/KG	102.6
		Magnesium, LCS	2390	2500	MG/KG	95.4
		Manganese, LCS	73.5	75.0	MG/KG	98.0
		Molybdenum, LCS	466	500	MG/KG	93.3
		Sodium, LCS	2200	2500	MG/KG	88.2
		Nickel, LCS	191	200	MG/KG	95.6
		Phosphorus, LCS	433	500	MG/KG	86.5
		Lead, LCS	236	250	MG/KG	94.4
		Antimony, LCS	280	300	MG/KG	93.2
		Selenium, LCS	915	1000	MG/KG	91.5
		Silicon, LCS	22.4	500	MG/KG	4.5
		Tin, LCS	476	500	MG/KG	95.1
		Strontium, LCS	489	500	MG/KG	97.8
		Thallium, LCS	945	1000	MG/KG	94.5
		Uranium, LCS	486	500	MG/KG	97.2
		Vanadium, LCS	238	250	MG/KG	95.1
		Zinc, LCS	95.5	100	MG/KG	95.5
LCS1	08C0129-LC1	Mercury, LCS	4.7	4.7	MG/KG	99.3

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0269
Date/Time Initiated: 7/14/08 1225
Date/Time Completed: 7/14/08 1445
Analyst(s): RB
Matrix: (Soil) Water Other: solids
Instr. Type: AA (CP)
Parameters: See backlog

(Digested) / Undigested (circle one)
Balance #: B29
Balance Cal Verif: (Y) NA
Hot Plate Temp: 95°

Method: SW (circle) 3005A, 3010A, 3015, 3020A, 7060A (As/Se), 7760A (Ag), (3050B), 3051
DW 200.7 (1994), 200.9, 3113B
MCAWW 200.7 (1982), 200 (AA), 206.2 (As/Se)
SM 3030C (NC)
CLP ILMO3.0, ILMO4.0
Other* _____

TNW/LONZA

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/ TC	Texture	Color/Appearance	Artifact	Turb
08071387-001		1.17	100	NA	TOT	fine	BROWN	NA	NA
001R		1.16							
001S	1.0 *	1.18							
002		1.05							
003		1.14							
004		1.11							
005		1.11							
006		1.18							
NR 08071421-001		1.11					OILY DARK SAND		
001R		1.08				COARSE	OILY DARK SAND		
001S	1.0 (*)	1.14							
002		1.19					BROWN		
003		1.05					BROWN		
08071422-001		1.00				fine			
001R		1.12							
001S	1.0 *	1.01							
08061333-001		1.06				NA	cloudy lq. WASTE		
001R		1.06							
001S	1.0	1.09							
002		1.40					cloudy lq WASTE		
08L0269-MB1		1.0					clear		
LC1	1.0 **	1.0							
				Ten 7/14/08					

Spiking IDs:
MS #: 8100-004-01, 02, 03
6072-75-07
LCS #: 08, 09, 010, 011

Reagent IDs:
HNO_3 E46025
HCl G05039
H_2O_2 G15A18
1:1 HNO_3 9789-081-03
1:1 HCl

File ID#: IC026901, IC026902, IC026903
LIMS Transfer: (Y) N
Data Review By/Date: updated
PMP, 07/16/08

+ Spiked w/ 0.5mL Bi, P-, U- 6072-076-06 (Bi) (*) Spiked w/ 0.5mL Zr, 6072-76-05
07 (P)
078-01 (U)

** Spiked w/ 0.5mL Bi, P-, U-, Zr (same as above)

Lionville Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 455

Analyst: TEB
Date 7/14/08
Start Time/Temp: 1540 | 98°
End Time/Temp: 1610 | 92°

Instrument ID H63.1/2
Balance #: 029 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0129
Worksheet: H607150I/02/H607160I
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes __ No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: **The Inital/Final Volume for water samples = 33mL, unless otherwise noted.**
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	461			10mL	50mL	
0.2 µg/L	KX	0.100				
1.0	41	0.500				
2.0	1C	1.000				
5.0	C9	2.500				
10.0	71L	5.000				
ICV	X3	0.125	2.5			
CCV	LV	0.250	5.0			
ICB/CCB	PT					9.50L
MBI	R			0.30		100.00
LCI	676	*	*	0.37		
0807L423-001	183			0.33		
001R	JI			0.31		
001S	95	0.050	10.0	0.34		
002	I94			0.34		
003	297			0.37		
0807L421-001	HR			0.33		
001R	P1			0.31		
001S	JS	0.050	10.0	0.33		
0807L422-001	8H			0.31		98.18
001R	Gd			0.34		
001S	27	0.500	1.0	0.33		
0807L427-001	DR			0.34		95.28
001R	1721			0.36		
001S	P5	0.500	1.0	0.34		
002	G7			0.32		95.47
0807L421-002	2V4			0.31		102.00

Standard:	ID	Prep Date/Time
ICAL/MS	R1607d-78-14B	7/14/08 1045
ICV/CCV/LCS	US607d-78-15A	〃

Reviewed By/Date: TE 7/14/08

see book # 736 for std traceability information

Soil LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg *
Catalogue #1RM-021, Lot # E021

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

Lionville Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 455

Analyst: CRD
Date 7/14/08
Start Time/Temp:
End Time/Temp: See page 07

Instrument ID H63.1/2
Balance #: B29 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0129
Worksheet: H607150102 | H607160102
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes NA No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: **The Inital/Final Volume for water samples = 33mL, unless otherwise noted.**
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
0807L421-003	RL			0.31	50mL	100.00

Tom 7/14/08

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	See page 07	

Reviewed By/Date: [signature] 7/15/08

see book # 9368 for std traceability information

Soil LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

nville Laboratory Use Only

8071 422

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

000000019

nt TNU HANFORD SAF# BC-074

. Final Proj. Sampling Date

ject# 11343-606-001-9999-00

ject Contact/Phone#

ville Laboratory Project Manager O. JOHNSON

SW846 Del STD TAT 7 days

e Rec'd 7-11-08 Date Due 7-18-08

		AB					C	D	E		F				
Refrigerator #															
#/Type Container	Liquid / Solid	2G					1G	1G	1G	1	1G	1			
Volume		30g					30g	80g	80g	1	30g	1			
Preservatives		—					—	—	—	1	—	1			
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb			TOX	INORG: Metal	CN	SULFIDE	TC ANIONS	PH			

RIX IES: Soil Sediment Solid Sludge Water Oil Air Drum Solids Drum Liquids EP/TCLP Leachate Wipe Other Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only												
								0625H				TOX	METO	ICUTO	ISFO	ICO	IPH			
	001	T17321	✓	✓	Soil	7-8-08	1030	X				X	X	X	X	X	X			

cial Instructions: HSL +

METO = Bi, B, Mo, P, Li, Si, Sn, Sn, U,

ICO = Br, Cl, F, SO4, PO4, NO2, NO3

Special Instructions:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
		7/11/08	0940

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		COMPOSITE WASTE	

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-074-083

0200000020

llector D.W. Shea/Sub-contractor	Company Contact D.W.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH
ject Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	Sampling Location 118-DR-1, soils with red liquid		SAF No. RC-074
Chest No. -	Field Logbook No. EL-1607-4	COA R18DR12600	Method of Shipment Fed Ex
ipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. See OPSC		Bill of Lading/Air Bill No.

Price Code: 8J

Data Turnaround: 7days

OSSIBLE SAMPLE HAZARDS/REMARKS

otentially radioactive, pH between 12 & 13

pecial Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	G/P	aG	aG	G/P	G	G/P	G/P			
No. of Container(s)	1	~~1~~ 2	1	1	1	~~1~~ 0	1			
Volume	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	5g	~~60mL~~ 30g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	TOX - 9020	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Gross Alpha; Gross Beta	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
7321	SOIL	7/8/08	1030	✓	✓	✓	✓	✓	7/14/08			

CHAIN OF POSSESSION

Sign/Print Names			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
W Shea DWSHEA	7/8/08 1745	Fridge 1B	7/8/08 1745
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
260/1B 0930	JUL 10 2008	0930 MStankoach	JUL 10 2008
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MStankoach WCH	JUL 10 2008	FedEx	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	7/11/08 0940		7/11/08 0940
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc} and Hg via CVAA

(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

JWS 7/11/08

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

H-EE-011

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD Date: 7/11/08

Project/SAF/SOW/Release #: RC-074

LvLI Batch #: 0807C422 Sample Custodian: Vicki Hummel

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7919 2758 9827
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 4.3	°C	Cooler # ERC-02-003
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

LvLI LIONVILLE LABORATORY INC

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17321						
% SOLIDS	001	S	08L%5063	07/08/08	07/15/08	07/16/08
% SOLIDS	001 REP	S	08L%5063	07/08/08	07/15/08	07/16/08
BROMIDE BY IC	001	S	08LICT49	07/08/08	07/17/08	07/18/08
BROMIDE BY IC	001 REP	S	08LICT49	07/08/08	07/17/08	07/18/08
BROMIDE BY IC	001 MS	S	08LICT49	07/08/08	07/17/08	07/18/08
CHLORIDE BY IC	001	S	08LICS49	07/08/08	07/17/08	07/18/08
CHLORIDE BY IC	001 REP	S	08LICS49	07/08/08	07/17/08	07/18/08
CHLORIDE BY IC	001 MS	S	08LICS49	07/08/08	07/17/08	07/18/08
FLUORIDE BY IC	001	S	08LICS49	07/08/08	07/17/08	07/18/08
FLUORIDE BY IC	001 REP	S	08LICS49	07/08/08	07/17/08	07/18/08
FLUORIDE BY IC	001 MS	S	08LICS49	07/08/08	07/17/08	07/18/08
NITRITE BY IC	001	S	08LICS49	07/08/08	07/17/08	07/18/08
NITRITE BY IC	001 REP	S	08LICS49	07/08/08	07/17/08	07/18/08
NITRITE BY IC	001 MS	S	08LICS49	07/08/08	07/17/08	07/18/08
NITRATE BY IC	001	S	08LICS49	07/08/08	07/17/08	07/18/08
NITRATE BY IC	001 REP	S	08LICS49	07/08/08	07/17/08	07/18/08
NITRATE BY IC	001 MS	S	08LICS49	07/08/08	07/17/08	07/18/08
TOTAL CYANIDE	001	S	08LC041	07/08/08	07/15/08	07/15/08
TOTAL CYANIDE	001 REP	S	08LC041	07/08/08	07/15/08	07/15/08
TOTAL CYANIDE	001 MS	S	08LC041	07/08/08	07/15/08	07/15/08
PHOSPHATE BY IC	001	S	08LICS49	07/08/08	07/17/08	07/18/08
PHOSPHATE BY IC	001 REP	S	08LICS49	07/08/08	07/17/08	07/18/08
PHOSPHATE BY IC	001 MS	S	08LICS49	07/08/08	07/17/08	07/18/08
SULFATE BY IC	001	S	08LICS49	07/08/08	07/17/08	07/18/08
SULFATE BY IC	001 REP	S	08LICS49	07/08/08	07/17/08	07/18/08
SULFATE BY IC	001 MS	S	08LICS49	07/08/08	07/17/08	07/18/08
EXTRACTABLE ORGANIC	001	S	08LEA08	07/08/08	07/15/08	07/15/08
EXTRACTABLE ORGANIC	001 MS	S	08LEA08	07/08/08	07/15/08	07/15/08
EXTRACTABLE ORGANIC	001 MSD	S	08LEA08	07/08/08	07/15/08	07/15/08
PH	001	S	08LPH034	07/08/08	07/14/08	07/14/08
PH	001 REP	S	08LPH034	07/08/08	07/14/08	07/14/08
SULFIDE	001	S	08LSD047	07/08/08	07/15/08	07/15/08
SULFIDE	001 REP	S	08LSD047	07/08/08	07/15/08	07/15/08
SULFIDE	001 MS	S	08LSD047	07/08/08	07/15/08	07/15/08
LAB QC:						
BROMIDE BY IC	MB1	S	08LICT49	N/A	07/17/08	07/17/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-074 K1278

DATE RECEIVED: 07/11/08 LVL LOT # :0807L422

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BROMIDE BY IC	MB1 BS	S	08LICT49	N/A	07/17/08	07/17/08
CHLORIDE BY IC	MB1	S	08LICS49	N/A	07/17/08	07/17/08
CHLORIDE BY IC	MB1 BS	S	08LICS49	N/A	07/17/08	07/17/08
FLUORIDE BY IC	MB1	S	08LICS49	N/A	07/17/08	07/17/08
FLUORIDE BY IC	MB1 BS	S	08LICS49	N/A	07/17/08	07/17/08
NITRITE BY IC	MB1	S	08LICS49	N/A	07/17/08	07/17/08
NITRITE BY IC	MB1 BS	S	08LICS49	N/A	07/17/08	07/17/08
NITRATE BY IC	MB1	S	08LICS49	N/A	07/17/08	07/17/08
NITRATE BY IC	MB1 BS	S	08LICS49	N/A	07/17/08	07/17/08
TOTAL CYANIDE	LCS L	S	08LC041	N/A	07/15/08	07/15/08
TOTAL CYANIDE	LCS L	S	08LC041	N/A	07/15/08	07/15/08
TOTAL CYANIDE	MB1	S	08LC041	N/A	07/15/08	07/15/08
PHOSPHATE BY IC	MB1	S	08LICS49	N/A	07/17/08	07/17/08
PHOSPHATE BY IC	MB1 BS	S	08LICS49	N/A	07/17/08	07/17/08
SULFATE BY IC	MB1	S	08LICS49	N/A	07/17/08	07/17/08
SULFATE BY IC	MB1 BS	S	08LICS49	N/A	07/17/08	07/17/08
EXTRACTABLE ORGANIC	MB1	W	08LEA08	N/A	07/15/08	07/15/08
EXTRACTABLE ORGANIC	MB1 BS	W	08LEA08	N/A	07/15/08	07/15/08
SULFIDE	MB1	S	08LSD047	N/A	07/15/08	07/15/08
SULFIDE	MB1 BS	S	08LSD047	N/A	07/15/08	07/15/08
SULFIDE	MB1 BSD	S	08LSD047	N/A	07/15/08	07/15/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-074 K1278
LVL#: 0807L422

W.O.#: 11343-606-001-9999-00
Date Received: 07-11-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

   LvLI is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

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

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Phosphate that was below th control limit at 65.6% that may be attributed to matrix interference. The MS duplicate for Extractable Organic Halides (EOX) was within the 20% RPD control limit.

8. The replicate analyses were within the 20% RPD control limit with the exception of Chloride and Phosphate that may be attributed to sample inhomogeneity.

9. Results for soil samples are reported on a dry weight basis with the exception of EOX are reported on a wet weight basis.

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

Judy Stone — 7/29/08

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

njp\i07-422

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

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WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	√ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		__ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		√ 9010B/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		√ ~~9020B~~ 9023	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		√ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		√ 9030B(mod)/9034	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Bromide, Chloride, Fluoride **Method:** EPA 300.0

Other: Nitrite, Nitrate, Phosphate, Sulfate **Method**

L-WI-034/B-01/01

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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.

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INORGANICS DATA SUMMARY REPORT 07/28/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17321	% Solids	98.2		%	0.0	1.0
		Bromide by IC	2.5	u	MG/KG	2.5	1.0
		Chloride by IC	8.6		MG/KG	2.5	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	2.50	u	MG/KG	2.50	1.0
		Nitrate by IC	8.18		MG/KG	2.50	1.0
		Cyanide, Total	0.49	u	MG/KG	0.49	1.0
		Phosphate by IC	36.9		MG/KG	2.5	1.0
		Sulfate by IC	37.5		MG/KG	2.5	1.0
		Extr. Organic Halides	40.2	u	MG/KG	40.2	1.0
		pH	10.5		PH UNIT	0.01	1.0
		Sulfide	24.2	u	MG/KG	24.2	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/28/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LICT49-MB1	Bromide by IC	2.5 u	MG/KG	2.5	1.0
BLANK10	08LICS49-MB1	Chloride by IC	2.5 u	MG/KG	2.5	1.0
		Fluoride by IC	2.5 u	MG/KG	2.5	1.0
		Nitrite by IC	2.50 u	MG/KG	2.50	1.0
		Nitrate by IC	2.50 u	MG/KG	2.50	1.0
		Phosphate by IC	2.5 u	MG/KG	2.5	1.0
		Sulfate by IC	2.5 u	MG/KG	2.5	1.0
BLANK1	08LC041-MB1	Cyanide, Total	0.49 u	MG/KG	0.49	1.0
BLANK1	08LEA08-MB1	Extr. Organic Halides	39.9 u	MG/KG	39.9	1.0
BLANK10	08LSD047-MB1	Sulfide	20.9 u	MG/KG	20.9	1.0

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INORGANICS ACCURACY REPORT 07/28/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17321	Bromide by IC	56.7	0.0	50.0	113.3	1.0
		Chloride by IC	58.8	8.6	50.0	100.3	1.0
		Fluoride by IC	58.2	1.9	50.0	112.6	1.0
		Nitrite by IC	57.7	2.50u	50.0	115.4	1.0
		Nitrate by IC	62.2	8.18	50.0	108.1	1.0
		Cyanide, Total	4.81	0.49u	4.87	98.8	1.0
		Phosphate by IC	69.7	36.9	50.0	65.6	1.0
		Sulfate by IC	77.9	37.5	50.0	80.7	1.0
		Extr. Organic Halides	2550	1.1	2510	101.8	1.0
		Extr. Organic Halides	2480	1.1	2410	103.0	1.0
		Sulfide	274	22.3	286	88.3	1.0
BLANK10	08LICT49-MB1	Bromide by IC	57.3	2.5 u	59.0	97.2	1.0
BLANK10	08LICS49-MB1	Chloride by IC	56.7	2.5 u	59.0	96.1	1.0
		Fluoride by IC	58.0	2.5 u	59.0	98.3	1.0
		Nitrite by IC	57.8	2.50u	59.0	98.0	1.0
		Nitrate by IC	57.1	2.50u	59.0	96.7	1.0
		Phosphate by IC	57.9	2.5 u	59.0	98.2	1.0
		Sulfate by IC	57.4	2.5 u	59.0	97.3	1.0
BLANK1	08LEA08-MB1	Extr. Organic Halides	2520	39.9 u	2470	102.2	1.0
BLANK10	08LSD047-MB1	Sulfide	212	20.9 u	229	92.5	1.0
		Sulfide MSD	218	20.9 u	227	96.1	1.0

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INORGANICS DUPLICATE SPIKE REPORT 07/28/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	J17321	Extr. Organic Halides	101.8	103.0	1.2
BLANK10	08LSD047-MB1	Sulfide	92.5	96.1	3.8

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INORGANICS PRECISION REPORT 07/28/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17321	% Solids	98.2	98.2	0.020	1.0
		Bromide by IC	2.5 u	2.7 u	NC	1.0
		Chloride by IC	8.6	4.9	54.4	1.0
		Fluoride by IC	2.5 u	2.7 u	NC	1.0
		Nitrite by IC	2.50u	2.68u	NC	1.0
		Nitrate by IC	8.18	9.46	14.4	1.0
		Cyanide, Total	0.49u	0.50u	NC	1.0
		Phosphate by IC	36.9	27.3	29.9	1.0
		Sulfate by IC	37.5	35.7	5.0	1.0
		pH	10.5	10.6	0.2	1.0
		Sulfide	24.2 u	24.5 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/28/08

CLIENT: TNUHANFORD RC-074 K1278 LVL LOT #: 0807L422
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	08LC041-LCS1	Cyanide, Total LCS	1.91	2.0	MG/KG	95.3
LCSS2	08LC041-LCS2	Cyanide, Total LCS	9.37	10.0	MG/KG	93.7

nville Laboratory Use Only

'8071 422

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

000000012

nt TNU HANFORD SAF# BC-074

Final Proj. Sampling Date

lect# 11343-606-001-9999-00

lect Contact/Phone#

ville Laboratory Project Manager O-JOHNSON

SW846 Del STD TAT 7 days

e Rec'd 7-11-08 Date Due 7-18-08

Refrigerator #		AB					C	D	E		F				
#/Type Container	Liquid / Solid	2G					1G	1G	1G	1	1G	1			
Volume		30g					30g	30g	30g	1	30g	1			
Preservatives		—					—	—	—	1	—	1			
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb			TOX	INORG: Metal	CN	SulFide	IC Anions	PH			

RIX ES: Soil Sediment Solid Sludge Water Oil Air Drum Solids Drum Liquids EP/TCLP Leachate Wipe Other Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: 0625H				FTOX	Met0	ICnT0	ISF0	IC0	IPH			
	001	J17321	✓	✓	Soil	7-8-08	1030	X				X	X	X	X	X	X			

Special Instructions: HSL +

Met0 = Bi, B, Mo, P, Li, Si, Sn, Sr, U,

ICP = Br, Cl, F, SO_4, PO_4, NO_2, NO_3

Special Instructions:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
JEC	[signature]	7/11/08	0940

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		COMPOSITE WASTE	

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-074-083

Collector: D.W. Shea/Sub-contractor	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	Sampling Location: 118-DR-1, soils with red liquid		SAF No.: RC-074
Ice Chest No. -	Field Logbook No.: EL-1607-4	COA: R18DR12600	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: See OPSC		Bill of Lading/Air Bill No.

Price Code: 8J

Data Turnaround: 7days

0000000013

POSSIBLE SAMPLE HAZARDS/REMARKS: Potentially radioactive, pH between 12 & 13

Special Handling and/or Storage

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	G/P	aG	aG	G/P	G	G/P	G/P			
No. of Container(s)	1	2	1	1	1	10	1			
Volume	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	~~60mL~~ 30g	5g	~~60mL~~ 30g			
	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	TOX - 9020	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Gross Alpha, Gross Beta	See item (2) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time							
7321	SOIL	7/8/08	1030	✓	✓	✓	✓	✓	7/8/08	

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
W Shea DW Shea	7/8/08 1745	Fricke JB	7/8/08 1745
260/JB 0930	JUL 10 2008	MS Tankoach	JUL 10 2008
0930 MS Tankoach WCH	JUL 10 2008	FedEx	
FedEx	7/10/08 0940		7/10/08 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc} and Hg via CVAA

(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

JWH 7/8/08

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	

H-EE-011

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD Date: 7/11/08

Project/SAF/SOW/Release #: RC-074

LvLI Batch #: 0807C422 Sample Custodian: Vicki Hunsaker

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7919 2758 9827
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 4.3	°C	Cooler # ERC-02-003
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

LVLI LIONVILLE LABORATORY INC.