

SAF-RC-007
100-N Ancillary Facilities & 190-DR ETF
Analytical Data Requirements - Liquid
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Amy Hood	X0-18	<u>KW 5/13/08</u> INITIAL/DATE
Tom Edmundson	X0-18	<u>KW 5/13/08</u> INITIAL/DATE

COMMENTS:

SDG K1157

SAF-RC-007

Rad only

Chem only

☒ Rad & Chem

☒ Complete

Partial

Waste Site: 1330-N Waste Pad

RECEIVED
MAY 19 2008
EDMC



EBERLINE

SERVICES

April 14, 2008

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



Reference: **P.O. #S00W235A00**
Eberline Services R8-03-127-7785, SDG K1157

Dear Ms. Kessner:

Enclosed is the data report for five water samples designated under SAF No. RC-007, received at Eberline Services on March 27, 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 C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

Case Narrative

Page 1 of 1

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1157 was composed of five water samples designated under SAF No. RC-007 with a Project Designation of: 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re.

The samples were 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 April 11, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

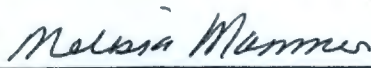
No problems were encountered during the course of the analyses.

2.2 Gamma Spectroscopy

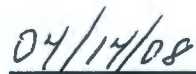
No problems were encountered during the course of the analyses.

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 C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

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

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Prepared by

Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 04/11/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1157

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/11/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

LAB						CHAIN OF	
SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CUSTODY	COLLECTED
R803127-01	J16HV3	1330-N Waste Pad	WATER		RC-007	RC-007-024	03/20/08 13:45
R803127-02	J16HV4	1330-N Waste Pad	WATER		RC-007	RC-007-024	03/20/08 13:55
R803127-03	J16HV5	1330-N Waste Pad	WATER		RC-007	RC-007-024	03/20/08 17:35
R803127-04	J16HV6	1330-N Waste Pad	WATER		RC-007	RC-007-024	03/20/08 17:50
R803127-05	J16HV7	1330-N Waste Pad	WATER		RC-007	RC-007-024	03/20/08 18:15
R803127-06	Lab Control Sample		WATER		RC-007		
R803127-07	Method Blank		WATER		RC-007		
R803127-08	Duplicate (R803127-03)	1330-N Waste Pad	WATER		RC-007		02/20/08 17:35
R803127-09	Duplicate (R803127-04)	1330-N Waste Pad	WATER		RC-007		03/20/08 17:50

LAB SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 04/11/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7785	RC-007-024	J16HV3	WATER		1.0 1		03/27/08	7	R803127-01	7785-001
		J16HV4	WATER		1.0 1		03/27/08	7	R803127-02	7785-002
		J16HV5	WATER		1.0 1		03/27/08	7	R803127-03	7785-003
		J16HV6	WATER		1.0 1		03/27/08	7	R803127-04	7785-004
		J16HV7	WATER		1.0 1		03/27/08	7	R803127-05	7785-005
		Method Blank	WATER						R803127-07	7785-007
		Lab Control Sample	WATER						R803127-06	7785-006
		Duplicate (R803127-03)	WATER		1.0 1		03/27/08	7	R803127-08	7785-008
		Duplicate (R803127-04)	WATER		1.0 1		03/27/08	7	R803127-09	7785-009

QC SUMMARY

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SUMMARY DATA SECTION

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Version Ver 1.0
Form DVD-QS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Gas Proportional Counting											
93A	WATER	Gross Alpha in Water	6148-049	20.6	5			1	1	1/1	
93B	WATER	Gross Beta in Water	6148-049	11.0	5			1	1	1/1	
Gamma Spectroscopy											
GAM	WATER	Gamma Emitters	6148-049	7.0	5			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.

PREP BATCH SUMMARY

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Report date 04/11/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785

Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford

Contract No. S00W235A00

Case no SDG K1157

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	MATRIX SAF No	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
803127-01	J16HV3		7785-001	93A/93		04/02/08	04/09/08	BW	Gross Alpha in Water
03/20/08	1330-N Waste Pad	WATER	7785-001	93B/93		04/02/08	04/09/08	BW	Gross Beta in Water
03/27/08	RC-007-024	RC-007	7785-001	GAM		04/01/08	04/09/08	BW	Gamma Emitters
803127-02	J16HV4		7785-002	93A/93		04/09/08	04/09/08	BW	Gross Alpha in Water
03/20/08	1330-N Waste Pad	WATER	7785-002	93B/93		04/05/08	04/09/08	BW	Gross Beta in Water
03/27/08	RC-007-024	RC-007	7785-002	GAM		04/01/08	04/09/08	BW	Gamma Emitters
803127-03	J16HV5		7785-003	93A/93		04/03/08	04/09/08	BW	Gross Alpha in Water
03/20/08	1330-N Waste Pad	WATER	7785-003	93B/93		04/03/08	04/09/08	BW	Gross Beta in Water
03/27/08	RC-007-024	RC-007	7785-003	GAM		04/01/08	04/09/08	BW	Gamma Emitters
803127-04	J16HV6		7785-004	93A/93		04/03/08	04/09/08	BW	Gross Alpha in Water
03/20/08	1330-N Waste Pad	WATER	7785-004	93B/93		04/03/08	04/09/08	BW	Gross Beta in Water
03/27/08	RC-007-024	RC-007	7785-004	GAM		04/01/08	04/09/08	BW	Gamma Emitters
803127-05	J16HV7		7785-005	93A/93		04/03/08	04/09/08	BW	Gross Alpha in Water
03/20/08	1330-N Waste Pad	WATER	7785-005	93B/93		04/03/08	04/09/08	BW	Gross Beta in Water
03/27/08	RC-007-024	RC-007	7785-005	GAM		04/03/08	04/09/08	BW	Gamma Emitters
803127-06	Lab Control Sample		7785-006	93A/93		04/03/08	04/09/08	BW	Gross Alpha in Water
		WATER	7785-006	93B/93		04/03/08	04/09/08	BW	Gross Beta in Water
		RC-007	7785-006	GAM		04/01/08	04/09/08	BW	Gamma Emitters
803127-07	Method Blank		7785-007	93A/93		04/03/08	04/09/08	BW	Gross Alpha in Water
		WATER	7785-007	93B/93		04/03/08	04/09/08	BW	Gross Beta in Water
		RC-007	7785-007	GAM		04/02/08	04/09/08	BW	Gamma Emitters
803127-08	Duplicate (R803127-03)		7785-008	GAM		04/02/08	04/09/08	BW	Gamma Emitters
03/20/08	1330-N Waste Pad	WATER							
03/27/08		RC-007							
803127-09	Duplicate (R803127-04)		7785-009	93A/93		04/03/08	04/09/08	BW	Gross Alpha in Water
03/20/08	1330-N Waste Pad	WATER	7785-009	93B/93		04/03/08	04/09/08	BW	Gross Beta in Water
03/27/08		RC-007							

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	RC-007	Gross Alpha in Water	900.0_ALPHABETA_GPC	5			1	1	1		8
93B/93	RC-007	Gross Beta in Water	900.0_ALPHABETA_GPC	5			1	1	1		8
GAM	RC-007	Gamma Emitters	GAMMA_GS	5			1	1	1		8
TOTALS				15			3	3	3		24

WORK SUMMARY

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SUMMARY DATA SECTION

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Version 3.06
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

7785-007

Method Blank

METHOD BLANK

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-07</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7785-007</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>RC-007</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.257	1.1	2.08	3.00	U	93A
Gross Beta	12587-47-2	0.624	1.1	1.90	4.00	U	93B
Potassium 40	13966-00-2	U		116		U	GAM
Cobalt 60	10198-40-0	U		4.95	25.0	U	GAM
Cesium 137	10045-97-3	U		5.44	15.0	U	GAM
Radium 226	13982-63-3	U		16.8		U	GAM
Radium 228	15262-20-1	U		25.1		U	GAM
Europium 152	14683-23-9	U		15.4	50.0	U	GAM
Europium 154	15585-10-1	U		14.2	50.0	U	GAM
Europium 155	14391-16-3	U		13.0	50.0	U	GAM
Thorium 228	14274-82-9	U		10.4		U	GAM
Thorium 232	TH-232	U		25.1		U	GAM
Uranium 235	15117-96-1	U		24.6		U	GAM
Uranium 238	U-238	U		627		U	GAM
Americium 241	14596-10-2	U		13.2		U	GAM
Antimony 125	14234-35-6	U		12.9		U	GAM
Barium 133	13981-41-4	U		6.04		U	GAM

100N Anclyr Fclts & 190DR ETF Analyt

QC-BLANK #65213

METHOD BLANKS

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SUMMARY DATA SECTION

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Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-DS</u>
Version	<u>3.06</u>
Report date	<u>04/11/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

7785-006

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-06</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7785-006</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>RC-007</u>	

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	44.8	6.1	1.99	3.00		93A	37.3	1.5	120	55-145	70-130
Gross Beta	35.8	2.6	1.84	4.00		93B	37.3	1.5	96	80-120	80-120
Cobalt 60	520	20	12.9	25.0		GAM	516	21	101	86-114	80-120
Cesium 137	610	19	14.4	15.0		GAM	564	23	108	86-114	80-120

100N Anclyr Pclts & 190DR ETF Analyt

QC-LCS #65212

LAB CONTROL SAMPLES

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LCS
 Version 3.06
 Report date 04/11/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

7785-008

J16HV5

DUPLICATE

SDG 7785

Contact Melissa C. Mannion

DUPLICATE

Lab sample id R803127-08

Dept sample id 7785-008

Client/Case no Hanford

SDG K1157

Contract No. S00W235A00

ORIGINAL

Lab sample id R803127-03

Dept sample id 7785-003

Received 03/27/08

Client sample id J16HV5

Location/Matrix 1330-N Waste Pad WATER

Collected/Volume 03/20/08 17:35 1.0 l

Custody/SAF No RC-007-024 RC-007

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	DER σ
Potassium 40	U		1140		U	GAM	U		1280	U	-		0.2
Cobalt 60	U		<u>67.4</u>	25.0	U	GAM	U		<u>45.4</u>	U	-		0.5
Cesium 137	U		<u>42.1</u>	15.0	U	GAM	U		<u>46.9</u>	U	-		0.2
Radium 226	U		100		U	GAM	U		109	U	-		0.1
Radium 228	U		196		U	GAM	U		217	U	-		0.1
Europium 152	U		<u>116</u>	50.0	U	GAM	U		<u>124</u>	U	-		0.1
Europium 154	U		<u>125</u>	50.0	U	GAM	U		<u>139</u>	U	-		0.1
Europium 155	U		<u>75.0</u>	50.0	U	GAM	U		<u>101</u>	U	-		0.4
Thorium 228	U		64.8		U	GAM	U		75.2	U	-		0.2
Thorium 232	U		196		U	GAM	U		217	U	-		0.1
Uranium 235	U		144		U	GAM	U		152	U	-		0.1
Uranium 238	U		5100		U	GAM	U		5420	U	-		0.1
Americium 241	U		74.8		U	GAM	U		94.0	U	-		0.3
Antimony 125	U		96.2		U	GAM	U		104	U	-		0.1
Barium 133	U		46.2		U	GAM	U		48.9	U	-		0.1

100N Anclyr Fclts & 190DR ETF Analyt

QC-DUP#3 65214

DUPLICATES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-DUP

Version 3.06

Report date 04/11/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

7785-009

J16HV6

DUPLICATE

SDG 7785

Contact Melissa C. Mannion

DUPLICATE

Lab sample id R803127-09

Dept sample id 7785-009

ORIGINAL

Lab sample id R803127-04

Dept sample id 7785-004

Received 03/27/08

Client/Case no Hanford SDG K1157

Contract No. S00W235A00

Client sample id J16HV6

Location/Matrix 1330-N Waste Pad WATER

Collected/Volume 03/20/08 17:50 1.0 l

Custody/SAF No RC-007-024 RC-007

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	6.23	23	<u>44.6</u>	3.00	U	93A	-4.87	19	<u>43.8</u>	U	-		0.7
Gross Beta	4.86	9.2	<u>15.9</u>	4.00	U	93B	4.20	14	<u>24.4</u>	U	-		0.1

100N Anclyr Fclts & 190DR ETF Analyt

QC-DUP#4 65221

DUPLICATES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-DUP

Version 3.06

Report date 04/11/08

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

7785-001

J16HV3

DATA SHEET

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-01</u>	Client sample id <u>J16HV3</u>	
Dept sample id <u>7785-001</u>	Location/Matrix <u>1330-N Waste Pad</u>	<u>WATER</u>
Received <u>03/27/08</u>	Collected/Volume <u>03/20/08 13:45</u>	<u>1.0 l</u>
	Custody/SAF No <u>RC-007-024</u>	<u>RC-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.633	1.4	2.57	3.00	U	93A
Gross Beta	12587-47-2	3.22	1.3	1.92	4.00		93B
Potassium 40	13966-00-2	U		402		U	GAM
Cobalt 60	10198-40-0	U		37.8	25.0	U	GAM
Cesium 137	10045-97-3	U		37.1	15.0	U	GAM
Radium 226	13982-63-3	U		85.2		U	GAM
Radium 228	15262-20-1	U		163		U	GAM
Europium 152	14683-23-9	U		99.7	50.0	U	GAM
Europium 154	15585-10-1	U		115	50.0	U	GAM
Europium 155	14391-16-3	U		70.5	50.0	U	GAM
Thorium 228	14274-82-9	U		61.3		U	GAM
Thorium 232	TH-232	U		163		U	GAM
Uranium 235	15117-96-1	U		135		U	GAM
Uranium 238	U-238	U		4650		U	GAM
Americium 241	14596-10-2	U		34.5		U	GAM
Antimony 125	14234-35-6	U		89.9		U	GAM
Barium 133	13981-41-4	U		43.4		U	GAM

100N Anclyr Fclts & 190DR ETF Analyt

DATA SHEETS

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

7785-002

J16HV4

DATA SHEET

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-02</u>	Client sample id <u>J16HV4</u>	
Dept sample id <u>7785-002</u>	Location/Matrix <u>1330-N Waste Pad</u>	<u>WATER</u>
Received <u>03/27/08</u>	Collected/Volume <u>03/20/08 13:55</u>	<u>1.0 l</u>
	Custody/SAF No <u>RC-007-024</u>	<u>RC-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	1950	260	<u>96.7</u>	3.00		93A
Gross Beta	12587-47-2	559000	1100	<u>41.9</u>	4.00		93B
Potassium 40	13966-00-2	U		689		U	GAM
Cobalt 60	10198-40-0	52800	330	<u>96.5</u>	25.0		GAM
Cesium 137	10045-97-3	264000	600	<u>192</u>	15.0		GAM
Radium 226	13982-63-3	U		257		U	GAM
Radium 228	15262-20-1	U		560		U	GAM
Europium 152	14683-23-9	U		<u>533</u>	50.0	U	GAM
Europium 154	15585-10-1	U		<u>205</u>	50.0	U	GAM
Europium 155	14391-16-3	U		<u>352</u>	50.0	U	GAM
Thorium 228	14274-82-9	U		266		U	GAM
Thorium 232	TH-232	U		560		U	GAM
Uranium 235	15117-96-1	U		649		U	GAM
Uranium 238	U-238	U		16400		U	GAM
Americium 241	14596-10-2	U		562		U	GAM
Antimony 125	14234-35-6	U		536		U	GAM
Barium 133	13981-41-4	U		215		U	GAM

100N Anclyr Fclts & 190DR ETF Analyt

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
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Report date <u>04/11/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

7785-003

J16HV5

DATA SHEET

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-03</u>	Client sample id <u>J16HV5</u>	
Dept sample id <u>7785-003</u>	Location/Matrix <u>1330-N Waste Pad</u>	<u>WATER</u>
Received <u>03/27/08</u>	Collected/Volume <u>03/20/08 17:35</u>	<u>1.0 l</u>
	Custody/SAF No <u>RC-007-024</u>	<u>RC-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	<u>-0.714</u>	0.62	1.62	3.00	U	93A
Gross Beta	12587-47-2	2.16	1.5	2.27	4.00	U	93B
Potassium 40	13966-00-2	U		1280		U	GAM
Cobalt 60	10198-40-0	U		<u>45.4</u>	25.0	U	GAM
Cesium 137	10045-97-3	U		<u>46.9</u>	15.0	U	GAM
Radium 226	13982-63-3	U		109		U	GAM
Radium 228	15262-20-1	U		217		U	GAM
Europium 152	14683-23-9	U		<u>124</u>	50.0	U	GAM
Europium 154	15585-10-1	U		<u>139</u>	50.0	U	GAM
Europium 155	14391-16-3	U		<u>101</u>	50.0	U	GAM
Thorium 228	14274-82-9	U		75.2		U	GAM
Thorium 232	TH-232	U		217		U	GAM
Uranium 235	15117-96-1	U		152		U	GAM
Uranium 238	U-238	U		5420		U	GAM
Americium 241	14596-10-2	U		94.0		U	GAM
Antimony 125	14234-35-6	U		104		U	GAM
Barium 133	13981-41-4	U		48.9		U	GAM

100N Anclyr Felts & 190DR ETF Analyt

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

7785-004

J16HV6

DATA SHEET

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-04</u>	Client sample id <u>J16HV6</u>	
Dept sample id <u>7785-004</u>	Location/Matrix <u>1330-N Waste Pad</u>	<u>WATER</u>
Received <u>03/27/08</u>	Collected/Volume <u>03/20/08 17:50</u>	<u>1.0 l</u>
	Custody/SAF No <u>RC-007-024</u>	<u>RC-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-4.87	19	<u>43.8</u>	3.00	U	93A
Gross Beta	12587-47-2	4.20	14	<u>24.4</u>	4.00	U	93B
Potassium 40	13966-00-2	U		1880		U	GAM
Cobalt 60	10198-40-0	U		<u>67.8</u>	25.0	U	GAM
Cesium 137	10045-97-3	U		<u>65.1</u>	15.0	U	GAM
Radium 226	13982-63-3	U		156		U	GAM
Radium 228	15262-20-1	U		313		U	GAM
Europium 152	14683-23-9	U		<u>176</u>	50.0	U	GAM
Europium 154	15585-10-1	U		<u>205</u>	50.0	U	GAM
Europium 155	14391-16-3	U		<u>142</u>	50.0	U	GAM
Thorium 228	14274-82-9	U		114		U	GAM
Thorium 232	TH-232	U		313		U	GAM
Uranium 235	15117-96-1	U		264		U	GAM
Uranium 238	U-238	U		7770		U	GAM
Americium 241	14596-10-2	U		58.6		U	GAM
Antimony 125	14234-35-6	U		164		U	GAM
Barium 133	13981-41-4	U		76.1		U	GAM

100N Anclyr Felts & 190DR ETF Analyt

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1157

7785-005

J16HV7

DATA SHEET

SDG <u>7785</u>	Client/Case no <u>Hanford</u>	SDG <u>K1157</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803127-05</u>	Client sample id <u>J16HV7</u>	
Dept sample id <u>7785-005</u>	Location/Matrix <u>1330-N Waste Pad</u>	<u>WATER</u>
Received <u>03/27/08</u>	Collected/Volume <u>03/20/08 18:15</u>	<u>1.0 l</u>
	Custody/SAF No <u>RC-007-024</u>	<u>RC-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.551	1.4	2.55	3.00	U	93A
Gross Beta	12587-47-2	1.59	2.3	3.93	4.00	U	93B
Potassium 40	13966-00-2	6720	2700	517			GAM
Cobalt 60	10198-40-0	U		<u>52.1</u>	25.0	U	GAM
Cesium 137	10045-97-3	U		<u>53.4</u>	15.0	U	GAM
Radium 226	13982-63-3	240	120	104			GAM
Radium 228	15262-20-1	239	190	194			GAM
Europium 152	14683-23-9	U		<u>150</u>	50.0	U	GAM
Europium 154	15585-10-1	U		<u>148</u>	50.0	U	GAM
Europium 155	14391-16-3	U		<u>143</u>	50.0	U	GAM
Thorium 228	14274-82-9	U		84.2		U	GAM
Thorium 232	TH-232	239	190	194			GAM
Uranium 235	15117-96-1	U		226		U	GAM
Uranium 238	U-238	U		5240		U	GAM
Americium 241	14596-10-2	U		205		U	GAM
Antimony 125	14234-35-6	U		117		U	GAM
Barium 133	13981-41-4	U		63.4		U	GAM

100N Anclyr Fclts & 190DR ETF Analyt

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

Test 93A Matrix WATER
SDG 7785
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1157

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha	
Preparation batch 6148-049					
803127-01	93	7785-001	J16HV3		U
803127-02	93	7785-002	J16HV4	1950	
803127-03	93	7785-003	J16HV5		U
803127-04	93	7785-004	J16HV6		U
803127-05	93	7785-005	J16HV7		U
803127-06	93	7785-006	Lab Control Sample	ok	
803127-07	93	7785-007	Method Blank		U
803127-09	93	7785-009	Duplicate (R803127-04)	-	U

nominal values and limits from method RDLs (pCi/L) 3.00
.00N Anclyr Fclts & 190DR ETF Analyt

METHOD PERFORMANCE

LAB	RAW		SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-		
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	mg	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6148-049 2σ prep error 20.6 % Reference Lab Notebook #6146, pg. 49																	
803127-01	93		J16HV3		2.57	0.300			82		100			13	04/02/08	04/02	GRB-211
803127-02	93		J16HV4		96.7	0.0250			280		100			20	04/02/08	04/09	GRB-211
803127-03	93		J16HV5		1.62	0.250			10		100			14	04/02/08	04/03	GRB-115
803127-04	93		J16HV6		43.8	0.0400			202		100			14	04/02/08	04/03	GRB-213
803127-05	93		J16HV7		2.55	0.215			32		100			14	04/02/08	04/03	GRB-214
803127-06	93		Lab Control Sample		1.99	0.300			61		100				04/02/08	04/03	GRB-216
803127-07	93		Method Blank		2.08	0.300			61		100				04/02/08	04/03	GRB-209
803127-09	93		Duplicate (R803127-04)		44.6	0.0400			207		100			14	04/02/08	04/03	GRB-210

nominal values and limits from method 3.00 0.0250 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
SPP-120 Gross Alpha and Gross Beta in Water, rev 0

AVERAGES ± 2 SD MDA 24.5 ± 69.6
FOR 8 SAMPLES RESIDUE 117 ± 197

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/11/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

Test 93B Matrix WATER

SDG 7785

Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford

Contract No. S00W235A00

Contract SDG K1157

RESULTS

LAB RAW SUP-

SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Gross Beta

Preparation batch 6148-049

803127-01	93		7785-001	J16HV3	3.22
803127-02	93		7785-002	J16HV4	559000
803127-03	93		7785-003	J16HV5	U
803127-04	93		7785-004	J16HV6	4.20 U
803127-05	93		7785-005	J16HV7	U
803127-06	93		7785-006	Lab Control Sample	ok
803127-07	93		7785-007	Method Blank	U
803127-09	93		7785-009	Duplicate (R803127-04)	- U

Nominal values and limits from method RDLs (pCi/L) 4.00

.00N Ancrly Fclts & 190DR ETF Analyt

METHOD PERFORMANCE

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

Preparation batch 6148-049 2σ prep error 11.0 % Reference Lab Notebook #6146, pg. 49

803127-01	93	J16HV3	1.92	0.300			82	100				13	04/02/08	04/02	GRB-211
803127-02	93	J16HV4	<u>41.9</u>	0.0250			<u>280</u>	100				16	04/02/08	04/05	GRB-107
803127-03	93	J16HV5	2.27	0.250			10	100				14	04/02/08	04/03	GRB-115
803127-04	93	J16HV6	<u>24.4</u>	0.0400			202	100				14	04/02/08	04/03	GRB-213
803127-05	93	J16HV7	3.93	0.215			32	100				14	04/02/08	04/03	GRB-214
803127-06	93	Lab Control Sample	1.84	0.300			61	100					04/02/08	04/03	GRB-216
803127-07	93	Method Blank	1.90	0.300			61	100					04/02/08	04/03	GRB-209
803127-09	93	Duplicate (R803127-04)	<u>15.9</u>	0.0400			207	100				14	04/02/08	04/03	GRB-210

Nominal values and limits from method 4.00 0.0250 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
SPP-120 Gross Alpha and Gross Beta in Water, rev 0

AVERAGES ± 2 SD MDA 11.8 ± 29.6
FOR 8 SAMPLES RESIDUE 117 ± 197

METHOD SUMMARIES

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LMS

Version 3.06

Report date 04/11/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1157

Test GAM Matrix WATER

SDG 7785

Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA EMITTERS

GAMMA SPECTROSCOPY

Client Hanford

Contract No. S00W235A00

Contract SDG K1157

RESULTS

LAB RAW SUF-

SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 6148-049

803127-01	7785-001	J16HV3	U	U
803127-02	7785-002	J16HV4	52800	264000
803127-03	7785-003	J16HV5	U	U
803127-04	7785-004	J16HV6	U	U
803127-05	7785-005	J16HV7	U	U
803127-06	7785-006	Lab Control Sample	ok	ok
803127-07	7785-007	Method Blank	U	U
803127-08	7785-008	Duplicate (R803127-03)	- U	- U

nominal values and limits from method RDLs (pCi/L) 25.0 15.0

.00N Anclyr Fclts & 190DR ETF Analyt

METHOD PERFORMANCE

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

reparation batch 6148-049			2σ prep error 7.0 %		Reference Lab Notebook #6146, pg. 49									
803127-01	J16HV3	155	0.100				922				12	03/31/08	04/01	JR,01,00
803127-02	J16HV4	800	0.100				963				12	03/31/08	04/01	JR,02,00
803127-03	J16HV5	190	0.100				966				12	03/31/08	04/01	JR,04,00
803127-04	J16HV6	323	0.100				966				12	03/31/08	04/01	JR,06,00
803127-05	J16HV7	278	0.100				1011				14	03/31/08	04/03	JR,08,00
803127-06	Lab Control Sample	14.4	0.500				966					03/31/08	04/01	JR,08,00
803127-07	Method Blank	29.0	0.500				1002					03/31/08	04/02	JR,02,00
803127-08	Duplicate (R803127-03)	175	0.100				1003				13	03/31/08	04/02	JR,04,00

nominal values and limits from method 15.0 0.100 100 180

PROCEDURES REFERENCE GAMMA_GS
SPP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 246 ± 496
FOR 8 SAMPLES YIELD ±

METHOD SUMMARIES

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

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1157

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.

REPORT GUIDES

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/11/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1157

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 K1157

SDG 7785
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1157

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.

REPORT GUIDES

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/11/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1157

SDG 7785
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1157

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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SUMMARY DATA SECTION

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Lab id EBRLNE
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Form DVD-RG
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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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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 7785
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LAB CONTROL SAMPLE

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

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

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

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

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

1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

- * The first, computed limits for the recovery reflect:

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

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

2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

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

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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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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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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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-007-024		Page 1 of 1			
Collector Edmundson/Ison/Perry		Company Contact Tom Edmundson		Telephone No. 376-4058		Project Coordinator KESSNER, JH		Price Code 7K		Data Turnaround 15 Days			
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re		Sampling Location 1330-N Waste Pad		K1157 (7785)		SAF No. RC-007							
Ice Chest No. ERC-99-046		Field Logbook No. EL-1516-12		COA RD4MXX2F00		Method of Shipment Fed Ex							
Shipped To EBERLINE SERVICES / LIONVILLE		Offsite Property No. A080215		Bill of Lading/Air Bill No. See OSCP									
POSSIBLE SAMPLE HAZARDS/REMARKS Potential Rad J16HV3 & J16HV4 HV5 to HV7 - Non Rad Special Handling and/or Storage Preserved				Preservation		HNO3 to pH <2	HNO3 to pH <2	None	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Cool	None	HCl to pH <2 Cool 4C
				Type of Container		G/P	G/P	G/P	G/P	aG	aGs*	G	aG
				No. of Container(s)		1	6	1	1	4	3	1	3
				Volume		1000mL	1000mL	60mL	500mL	1000mL	40mL	250mL	1000mL
SAMPLE ANALYSIS				Gross Alpha, Gross Beta		See item (1) in Special Instructions.	RCF GEA Shipping Screen	See item (2) in Special Instructions.	PCBs - 8082	See item (3) in Special Instructions.	Ignitability - 1010	See item (4) in Special Instructions.	
				JRE 3-20-08									
Sample No.	Matrix *	Sample Date	Sample Time										
J16HV3	WATER	3/20/08	1345	✓	✓								
J16HV4	WATER	3/20/08	1355	✓	✓								
J16HV5	WATER	3/20/08	1735	✓	✓								
J16HV6	WATER	3/20/08	1750	✓	✓								
J16HV7	WATER	3/20/08	1815	✓	✓								
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Pick up and trans-ship RCF samples with these sample sets.					
J.R. Edmundson		3-20-08 2215		1060 B. Helle #1C		3-20-08 2215		(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228)					
1060 B. Helle #1C		3/26/08 1230		David St. John		3/26/08 1230		(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium/Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)					
David St. John		3/26/08 1230		FED EX				(3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Hexanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total))					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))					
FED EX				JRW		03/27/08 09:00							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
LABORATORY SECTION		Received By		Title				Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time					



EBERLINE
SERVICES

RICHMOND, CA LABORATORY
SAMPLE RECEIPT CHECKLIST

Jlc 3/27/08

Client: W.C. HANFORD City RICHMOND State WA
Date/Time received 03/27/08 09:02 CoC No. RC-007-024
Container I.D. No. ERC-99-046 Requested TAT (Days) 15 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes ☒ No [] N/A []
2. Custody seals on shipping container dated & signed? Yes ☒ No [] N/A []
3. Custody seals on sample containers intact? Yes ☒ No [] N/A []
4. Custody seals on sample containers dated & signed? Yes ☒ No [] N/A []
5. Packing material is: Wet [] Dry ☒
6. Number of samples in shipping container: 5 Sample Matrix W
7. Number of containers per sample: 1 (Or see CoC)
8. Samples are in correct container Yes ☒ No []
9. Paperwork agrees with samples? Yes ☒ No []
10. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels ☒
11. Samples are: In good condition ☒ 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 *Jlc* Date: 03/27/08 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
J164V4	270						
OTHER SAMPLES	<60						

Ion Chamber Ser. No.
Alpha Meter Ser. No.
Beta/Gamma Meter Ser. No. 100482

Calibration date
Calibration date
Calibration date 09 MAY 07



21 April 2008



Joan Kessner
WC-Hanford
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 #	0803L832
SDG #	K1157
SAF #	RC-007
Date Received	3/27/08
# Samples	5
Matrix	WATER
Volatiles	X
Semivolatiles	
Pest/PCB	X
Glycols	
DRO/KRO/GRO	X
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.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT.# :0803L832

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16HV3	001	W	08LE0158	03/20/08	04/03/08	04/08/08
J16HV4	002	W	08LE0158	03/20/08	04/03/08	04/08/08
J16HV5	003	W	08LE0158	03/20/08	04/03/08	04/08/08
J16HV6	004	W	08LE0158	03/20/08	04/03/08	04/08/08
J16HV7	005	W	08LE0158	03/20/08	04/03/08	04/08/08
LAB QC:						
BLK	MB1	W	08LE0158	N/A	04/03/08	04/07/08
BLK	MB1 BS	W	08LE0158	N/A	04/03/08	04/07/08
BLK	MB1 BSD	W	08LE0158	N/A	04/03/08	04/07/08



Case Narrative

Client: TNU-HANFORD RC-007
LVL #: 0803L832
SDG/SAF # K1157 / RC-007

W.O. #: 11343-606-001-9999-00
Date Received: 03-27-2008

DIESEL RANGE ORGANICS

Five (5) water samples were collected on 03-20-2008.

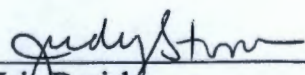
The samples and their associated QC samples were extracted on 04-03-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 04-07,08-2008. The extraction procedure was based on method 3520C and the extracts were analyzed based on method 8015B.

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:

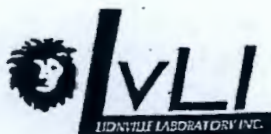
1. The samples were extracted 7 days outside of recommended hold time. Samples were on the last day of hold when received.
2. The method blank was below the reporting limits for all target compounds.
3. All surrogate recoveries were within acceptance criteria.
4. The blank spike recoveries were within acceptance criteria.
5. The following samples required dilutions; sample J16HV3 required a 10-fold instrument dilution; samples J16HV5 and J16HV7 required a 5-fold instrument dilution..
6. All initial calibrations associated with this data set were within acceptance criteria.
7. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.



8. 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.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/14/08
Date



GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- NS** = Not Spiked.
- SP** = Indicates Spiked Compound.
- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.
- NPM** = No pattern match for multi-component target analytes.

RFW Batch Number: 0803L832

Client: TNUHANFORD RC-007 K1157 Work Order: 11343606001 Page: 1

	Cust ID:	J16HV3	J16HV4	J16HV5	J16HV6	J16HV7	BLK
Sample Information	RFW#:	001	002	003	004	005	08LE0158-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	10.0	1.00	1000	1.00	1000	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L

p-Terphenyl	95	%	69	%	D	%	68	%	D	%	98	%
-----fl-----	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl
Diesel Range Organics	2000	U	970		1300000		1500		2000000	U	100	U
Motor Oil Range Organics	36000		600	U	1200000	U	600	U	0.12E+08		300	U

	Cust ID:	BLK BS	BLK BSD
Sample	RFW#:	08LE0158-MB1	08LE0158-MB1
Information	Matrix:	WATER	WATER
	D.F.:	1.00	1.00
	Units:	ug/L	ug/L
	p-Terphenyl	78 %	85 %
	-----fl-----	fl-----	fl-----
Diesel Range Organics		77 %	79 %
Motor Oil Range Organics		NS	NS

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

000000005

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 04/03/08

Extraction Batch No: 08LE0158

Analyst: MF

Method: CONT3520

Test: ODRO

Cleanup Date:

Analyst:

Client: TNUHANFORD RC-007 K1157

LIMS Report Date: 04/04/08

Solvent: DCM,HEXANE

Adsorbent:

Sample No:	Client Name Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0803L832-	TNUHANFORD RC-007 K1157										
001	J16HV3	3	500	1.0		1.0		1.0	N	0.0	2.00
002	J16HV4	3	500	1.0		1.0		1.0	N	0.0	2.00
003	J16HV5	3	500	1.0		2.0		1.0	N	0.0	4.00
004	J16HV6	3	500	1.0		1.0		1.0	N	0.0	2.00
005	J16HV7	3	500	1.0		10.0		1.0	N	0.0	20.00
08LE0158-MB1	BLK	7	1000	1.0		1.0		1.0	N	0.0	1.00
08LE0158-MB1 -S	BLK	7	1000	1.0	1.0	1.0		1.0	N	0.0	1.00
08LE0158-MB1 -T	BLK	7	1000	1.0	1.0	1.0		1.0	N	0.0	1.00

Comments:

Surrogate: 1.0 ML ODRO SURR 86971901

Spike: 1.0 ML DIESEL SPIKE 86971902

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
<i>all</i>	<i>[Signature]</i>	<i>4/4/08 1445</i>	<i>SZ</i>	<i>4/4/08 14:45</i>	<i>GL</i>

4/4/08
[Signature]

000000006



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1803L832

at TNU HANFORD SAF# RC-007

Final Proj. Sampling Date

ect# 11343-606-001-9999-00

ect Contact/Phone#

ville Laboratory Project Manager

SW846 Del STO TAT 15 day

Rec'd 3-27-08

Date Due 4-11-08

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only									
		MS	MSD				OG 24N	OPCB	OPRG	MC+O	II 6N					
001	J 16 HV3			W	3-20-08	1345	X	X	X	X	X					
002	4					1355	X	X	X	X	X					
003	5					1735	X	X	X	X	X					
004	6					1750	X	X	X	X	X					
005	7					1815	X	X	X	X	X					

cial Instructions:

not ① = HSL - Co, TL + Li, Sa

Special Instructions:

1. lab report molar w/ ODRD

-
-
-
-
-
-

Relinquished by	Received by	Date	Time
<u>DE</u>	<u>[Signature]</u>	<u>3/27/08</u>	<u>0935</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL	COMPOSITE		
REWRITTEN	WASTED		

000000007

Collector Edmundson/Isom/Perry	Company Contact Tom Edmundson	Telephone No. 376-4058	Project Coordinator KESSNER, JH	Price Code 7K	Data Turnaround 15 Days
Object Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re	Sampling Location 1330-N Waste Pad	SAF No. RC-007			
Chest No. BHI-94	Field Logbook No. EL-1516-12	COA RD4MXX2F00	Method of Shipment Fed Ex		
Shipped To BERLINE SERVICES (LIONVILLE)	Offsite Property No. A080204	Bill of Lading/Air Bill No. See OSCP			

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Rad J16HV3 + J16HV4

V5 to HV7 - non Rad
Special Handling and/or Storage

Cool + Preserve

Preservation	HNO3 to pH <2	HNO3 to pH <2	None	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Cool	None	HCl to pH <2 Cool 4C		
Type of Container	G/P	G/P	G/P	G/P	aG	aGr*	aG			
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	1000mL	1000mL	60mL	300mL 120mL	1000mL 250mL	40mL	250mL 120mL	1000mL	320-08	

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time										
J16HV3	WATER	3-20-08	1345					✓	✓	✓	✓		
J16HV4	WATER	3-20-08	1355					✓	✓	✓	✓		
J16HV5	WATER	3-20-08	1735					✓	✓	✓	✓		
J16HV6	WATER	3-20-08	1750					✓	✓	✓	✓		
J16HV7	WATER	3-20-08	1815					✓	✓	✓	✓		

CHAIN OF POSSESSION

Sign/Print Names

Acquired By/Removed From J16 Edmundson	Date/Time 3-20-08 2215	Received By/Stored In 1060 Batelle #1C	Date/Time 3-20-08 2215
Acquired By/Removed From 1060 BATTLE IC	Date/Time 3/26/08 1230	Received By/Stored In David St. John	Date/Time 3/26/08 1230
Acquired By/Removed From FED EX	Date/Time 3/26/08 1230	Received By/Stored In FED EX	Date/Time 3-27-08 0935
Acquired By/Removed From FED EX	Date/Time 3-27-08 0935	Received By/Stored In FED EX	Date/Time 3-27-08 0935
Acquired By/Removed From	Date/Time	Received By/Stored In	Date/Time
Acquired By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

Pick up and trans-ship RCF samples with these sample sets.
 * J16HV3 + J16HV4 on page 2 of 2 - used as RCF screen.
 (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228)
 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Rbassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)
 (3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Hexanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total))
 (4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))

Matrix *

S=Soil
SE=Soilment
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

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD
Project/SAF/SOW/Release #: RC-007

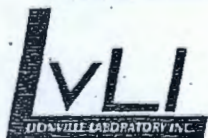
Date: 3-27-08

LvLI Batch #: 0803L832

Sample Custodian: Ant Hearn

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FD Ex</u> | Airbill # <u>7926 7224 4088</u> |
| 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 plastic bag and easily accessible? | ☒ Yes | ☐ No |
| 5. Samples received cooled or ambient? | Temp <u>3.1°</u> °C | Cooler # <u>BHI-94</u> |
| 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. <u>VPA</u> , 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 _____ | |



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157



DATE RECEIVED: 03/27/08

LVL LOT # : 08092832

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

J16HV3

IGNITABILITY	001	W	08LFP007	03/20/08	04/04/08	04/04/08
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J16HV4

IGNITABILITY	002	W	08LFP007	03/20/08	04/04/08	04/04/08
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J16HV5

IGNITABILITY	003	W	08LFP007	03/20/08	04/04/08	04/04/08
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J16HV6

IGNITABILITY	004	W	08LFP007	03/20/08	04/04/08	04/04/08
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J16HV7

IGNITABILITY	005	W	08LFP007	03/20/08	04/04/08	04/04/08
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LAB QC:

IGNITABILITY	MB1 BS	W	08LFP007	N/A	04/04/08	04/04/08
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Analytical Report

Client: TNU-HANFORD RC-0017 K1157
LVL#: 0803L832

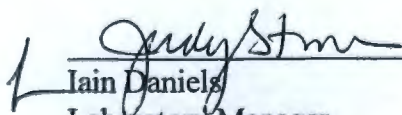
W.O.#: 11343-606-001-9999-00
Date Received: 03-27-08

INORGANIC NARRATIVE

1. This narrative covers the analysis of 5 liquid samples.
2. The samples were prepared and analyzed in accordance with the method checked 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 Laboratory Control Sample (LCS) was within the laboratory control limits.
6. Insufficient sample was provided so as to perform replicate analysis.
7. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

njp\03-832

4/14/08
Date

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 11 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

* Liquid samples

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

**Inorganic Data Summary Report
Physical Testing Observation**

Client: TNU-HANFORD RC-0017 K1157
LVL#: 0803L832

W.O.#: 11343-606-001-9999-00
Date Received: 03-27-08

Analyte:

Ignitability

Observation:

Samples J16HV3, J16HV4, J16HV5 and J16HV6 did not ignite.

The samples were heated to approximately 220°F.

p-Xylene was used to determine the accuracy of the ignitability apparatus. The p-Xylene will ignite at 81°F +/- 1°F. For this test, the p-Xylene ignited at 82°F.

njpl03-832.pt2



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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

• WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-005	J16HV7	Ignitability	176	DEG F	60.0	

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/08/08

CLIENT: TNUHANFORD RC-007 K1157
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L832

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
BLANK10	08LFP007-MB1	Ignitability	82.0	0.0	81.0	101.2	1.0

000000007

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1803L832

Int TNU HANFORD SAF# RC-007
 Final Proj. Sampling Date
 ect# 11343-606-001-9999-00
 ect Contact/Phone#
 Liqueville Laboratory Project Manager O Johnson
SW846 Del STA TAT 15 day
 e Rec'd 3-27-08 Date Due 4-11-08

Refrigerator #		A	B	C	D	E
		6	3	3	3	3
#/Type Container	Liquid	16		1P	1P	16
	Solid		16			
Volume		40	250	L	120	125
Preservatives		HCL	-	HCL	HNO3	-
ANALYSES REQUESTED →	ORGANIC			INORG		
	VOA	BNA	pest/PCB	Herb	pest/Metal	As Pb Cd

RIX 項目:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Liquille Laboratory Use Only											
			MS	MSD				OG 24N	OPCB	OPRG	OG 15	Met 1	II 6N						
Soil	001	I 16 HV3			W	3-20-08	1345	X	X		X	X	X	X	X				
Sediment	002	I 4			I		1355	X	X		X	X	X	X	X				
Solid	003	I 5			I		1735	X	X		X	X	X	X	X				
Sludge	004	I 6			I		1750	X	X		X	X	X	X	X				
Water	005	I 7			I		1815	X	X		X	X	X	X	X				
Oil																			
Air																			
Drum																			
Solids																			
Drum																			
Liquids																			
EP/TCUP																			
Leachate																			
Wipe																			
Other																			
Fish																			

Special Instructions: lab report molar w/ ODRD
 1. _____
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

Relinquished by	Received by	Date	Time
<u>DE</u>	<u>[Signature]</u>	<u>3/27/08</u>	<u>0935</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL	COMPOSITE		
REWRITTEN	WASTED		

0000000000

Collector Edmundson/Isom/Perry	Company Contact Tom Edmundson	Telephone No. 376-4058	Project Coordinator KESSNER, JH	Price Code 7K	Data Turnaround 15 Days
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re	Sampling Location 1330-N Waste Pad	SAF No. RC-007			
Chest No. BHI-94	Field Logbook No. EL-1516-12	COA RD4MXX2F00	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES PLIONVILLE	Offsite Property No. A080204	Bill of Lading/Air Bill No. See OSCP			

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Rad J16HV3 + J16HV4

HV5 to HV7 - non Rad
Special Handling and/or Storage

Cool + Preserve

Preservation	HNO3 to pH <2	HNO3 to pH <2	None	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Cool	None	HCl to pH <2 Cool 4C		
Type of Container	G/P	G/P	G/P	G/P	aG	aGs*	aG			
No. of Container(s)	1	1	1	1	51	51	1	51	1RE	3/20-08
Volume	1000mL	1000mL	60mL	300mL 120mL	1000mL 250mL	40mL	250mL 120mL	1000mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time									
6HV3	WATER	3-20-08	1345				✓	✓	✓	✓		
6HV4	WATER	3-20-08	1355				✓	✓	✓	✓		
6HV5	WATER	3-20-08	1735				✓	✓	✓	✓		
6HV6	WATER	3-20-08	1750				✓	✓	✓	✓		
6HV7	WATER	3-20-08	1815				✓	✓	✓	✓		

CHAIN OF POSSESSION

Sign/Print Names

inquired By/Removed From J.R. Edmundson	Date/Time 3-20-08 2215	Received By/Stored In 1060 BATELLE #1C	Date/Time 3-20-08 2215
inquired By/Removed From 260 BATELLE 1C	Date/Time 3/26/08 1230	Received By/Stored In DAVID STADMAN	Date/Time 3/26/08 1230
inquired By/Removed From J.R. Edmundson	Date/Time 3/26/08 1230	Received By/Stored In FED EX	Date/Time
inquired By/Removed From J.R. Edmundson	Date/Time 3-27-08 0935	Received By/Stored In J.R. Edmundson	Date/Time 3-27-08 0935
inquired By/Removed From	Date/Time	Received By/Stored In	Date/Time
inquired By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

Pick up and trans-ship RCF samples with these sample sets.

* J16HV3 + J16HV4 on page 2 of 2 - used as RCF screen.

- (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228)
- (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)
- (3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Hexanol, 2-Pentanol, 4-Methyl-2-Pentanol, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total))
- (4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))

Matrix *

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

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

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-007-024

Page 2 of 2

Collector Edmundson/Isom/Perry	Company Contact Tom Edmundson	Telephone No. 376-4058	Project Coordinator KESSNER, JH	Price Code 7K	Data Turnaround 15 Days
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re	Sampling Location 1330-N Waste Pad	SAF No. RC-007			
Field Logbook No. EL-1516-12	COA RD4MXX2F00	Method of Shipment Fed Ex			
Offsite Property No. A080204	Bill of Lading/Air Bill No. See OSCP				

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Rad

Special Handling and/or Storage

N/A

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	HNO ₃ to pH <2	HNO ₃ to pH <2	None	HNO ₃ to pH <2	Cool 4C	HCl or H ₂ SO ₄ to pH <2 Cool	None	HCl to pH <2 Cool	
16HV3	WATER	3-20-08	1345	Type of Container:	G/P	G/P	G/P	G/P	aG	aGs*	G	aG	
16HV4	WATER	3-20-08	1355	No. of Container(s)	1	1	0	1	4	3	1	3	
16HV5	WATER			Volume	1000mL	1000mL	60mL 120mL	500mL 120mL	1000mL	40mL	250mL	1000mL	
16HV6	WATER			Gross Alpha; Gross Beta	See item (1) in Special Instructions.	RCF GEA Shipping Screen	See item (2) in Special Instructions.	PCBs - 8082	See item (3) in Special Instructions.	Ignitability - 1010	See item (4) in Special Instructions.		
16HV7	WATER												

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Matrix *

Received By/Removed From JRE Edmundson 3-20-08 2215	Date/Time 3-20-08 2215	Received By/Stored In 7060 Battelle/B 3-20-08 2215	Date/Time 3-20-08 2215	Pick up and trans-ship RCF samples with their sample sets. * ICP Metals container used for RCF screen. Trans-ship to LVL-1 (1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228) (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Pentanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total)) (4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))	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
Received By/Removed From David St. John 3/24/08 0830	Date/Time 3/24/08 0830	Received By/Stored In David St. John 3/24/08 0830	Date/Time 3/24/08 0830		
Received By/Removed From David St. John 3/24/08 1010	Date/Time 3/24/08 1010	Received By/Stored In K. E. Larson / K. E. Larson 3-24-08 1010	Date/Time 3-24-08 1010		
Received By/Removed From K. E. Larson / K. E. Larson 3-25-08 1010	Date/Time 3-25-08 1010	Received By/Stored In David St. John 3/25/08 1010	Date/Time 3/25/08 1010		
Received By/Removed From David St. John 3/26/08 1230	Date/Time 3/26/08 1230	Received By/Stored In FED EX	Date/Time 3/26/08 1230		
Received By/Removed From David St. John 3-27-08 0935	Date/Time 3-27-08 0935	Received By/Stored In V. H. H. 3-27-08 0935	Date/Time 3-27-08 0935		

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

000000010

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD
Project/SAF/SOW/Release #: RC-007

Date: 3-27-08

LvLI Batch #: 0803L832

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?

Carrier

FD Ex

Airbill #

7926 7224 4088

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 plastic bag and easily accessible?

☒ Yes

☐ No

5. Samples received cooled or ambient?

Temp

3.1

°C

Cooler #

BHI-94

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?
All samples received on COC?

☒ Yes

☐ No

☒ 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?
Short holds taken to wet lab?

☒ Yes

☐ No

☒ 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?

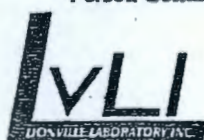
☐ Yes

☐ No

☒ N/A

Person Contacted _____

Date _____





Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16HV3	001	W	08LE0159	03/20/08	04/04/08	04/07/08
J16HV4	002	W	08LE0159	03/20/08	04/04/08	04/07/08
J16HV5	003	W	08LE0159	03/20/08	04/04/08	04/07/08
J16HV6	004	W	08LE0159	03/20/08	04/04/08	04/07/08
J16HV7	005	W	08LE0159	03/20/08	04/04/08	04/07/08
J16HV7	005	R1 W	08LE0175	03/20/08	04/15/08	04/16/08

LAB QC:

PBLKOU	MB1	W	08LE0159	N/A	04/04/08	04/07/08
PBLKOU	MB1 BS	W	08LE0159	N/A	04/04/08	04/07/08
PBLKOU	MB1 BSD	W	08LE0159	N/A	04/04/08	04/07/08
PBLKPD	MB1	W	08LE0175	N/A	04/15/08	04/16/08
PBLKPD	MB1 BS	W	08LE0175	N/A	04/15/08	04/16/08
PBLKPD	MB1 BSD	W	08LE0175	N/A	04/15/08	04/16/08

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08GC045

Initiator: Svetlana Zak
Date: 04/09/08
Client: TNU

Batch: 0803L832
Samples: 005
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Water
Prep Batch: 08LEC159-

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 DCA Recovery (10%)

2. Known or Probable Causes(s)

Sample contained large amount of Hydrocarbons (See BRO report)

Low surrogates are common with this

3. Discussion and Proposed Action

Other Description: _____

*type of sample
ID 4/17/08*

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

[Signature] 4/9/08

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

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

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

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

Other Explanation: _____

*Reextracted using less water
Surrogate is better but still on
the lower side of normal 28.*

When Final Action has been recorded, forward original to QA for disposition.

Route

☒ Lab Manager: Daniels
☒ Project Mgr (circle): Johnson / Stone
☒ Sample Prep (circle): Ford
☐ Log-in: King

Route

☐ Metals: Welsh / _____
☐ Inorganic: Perrone / _____
☐ GC/LC: Carey / _____
☐ MS VOA: Rubino / _____
☐ MS BNA: Carden / _____
☐ Other: _____



Case Narrative

Client: TNU-HANFORD RC-007
LVL #: 0803L832
SDG/SAF # K1157 / RC-007

W.O. #: 11343-606-001-9999-00
Date Received: 03-27-2008

PCB

Five (5) water samples were collected on 03-20-2008.

The samples and their associated QC samples was extracted on 04-04-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 04-07, 16-2008. The extraction procedure was based on method 3520C and the extracts were analyzed based on method 8082.

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

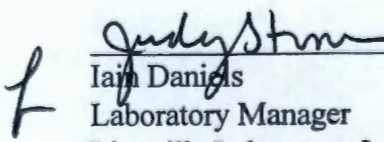
1. The samples were extracted 8 days outside of recommended hold time. Samples were on last day of hold when received.
2. The method blank was below the reporting limits for all target compounds.
3. One (1) of twenty-four (24) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08GC045) has been enclosed.
4. The blank spike recoveries were within acceptance criteria.
5. The initial calibrations associated with this data set were within acceptance criteria.
6. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

r:\group\data\2008\pest\tnu\0803-832cw2.pcb.doc

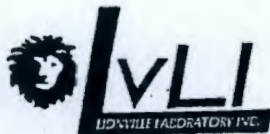
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.



7. 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.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/18/08
Date



GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- NS** = Not Spiked.
- SP** = Indicates Spiked Compound.
- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.
- NPM** = No pattern match for multi-component target analytes.

RfW Batch Number: 0803L832

Client: TNUHANFORD RC-007 K1157 Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	J16HV3	J16HV4	J16HV5	J16HV6	J16HV7	J16HV7
	RFW#:	001	002	003	004	005	005
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate:	Tetrachloro-m-xylene	65 %	83 %	70 %	79 %	52 %	78 %
	Decachlorobiphenyl	37 %	45 %	66 %	87 %	10 * %	35 %
		-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----
Aroclor-1016		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
Aroclor-1221		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
Aroclor-1232		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
Aroclor-1242		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
Aroclor-1248		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
Aroclor-1254		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
Aroclor-1260		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U

Sample Information	Cust ID:	PBLKOU	PBLKOU BS	PBLKOU BSD	PBLKPD	PBLKPD BS	PBLKPD BSD
	RFW#:	08LE0159-MB1	08LE0159-MB1	08LE0159-MB1	08LE0175-MB1	08LE0175-MB1	08LE0175-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate:	Tetrachloro-m-xylene	69 %	75 %	82 %	84 %	79 %	86 %
	Decachlorobiphenyl	86 %	91 %	98 %	79 %	83 %	92 %
		-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----
Aroclor-1016		0.40 U	81 %	86 %	0.40 U	75 %	77 %
Aroclor-1221		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1232		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1242		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1248		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1254		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1260		0.40 U	94 %	99 %	0.40 U	81 %	87 %

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

0000000006

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 04/04/08

Extraction Batch No: 08LE0159

Analyst: MF

Method: CONT3520

Test: OPCB

Cleanup Date: 08/06/08

Analyst: MF

Client: TNUHANFORD RC-007 K1157

LIMS Report Date: 04/07/08

Solvent: DCM,HEXANE

Adsorbent: H2SO4

Sample No:	Client Name Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0803L832-	TNUHANFORD RC-007 K1157										
001	J16HV3	7	200	1.0		10		1.0	N	0.0	50.00
002	J16HV4	7	200	1.0		10		1.0	N	0.0	50.00
003	J16HV5	7	200	1.0		10		1.0	N	0.0	50.00
004	J16HV6	7	200	1.0		10		1.0	N	0.0	50.00
005	J16HV7	7	200	1.0		10		1.0	N	0.0	50.00
08LE0159-MB1	PBLKOU	7	1000	1.0		10		1.0	N	0.0	10.00
08LE0159-MB1 -S	PBLKOU	7	1000	1.0	1.0	10		1.0	N	0.0	10.00
08LE0159-MB1 -T	PBLKOU	7	1000	1.0	1.0	10		1.0	N	0.0	10.00

Comments:

Surrogate: 250 UL OLM PSURR 89916405

Spike: 250 UL AR1660 89916602

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
<i>[Signature]</i>	<i>[Signature]</i>	4/6/08 12:00	52	4/7/08 12:00	Ge

000000007

Extract. Date: 04/15/08

Extraction Batch No: 08LE0175

Analyst: MF

Method: CONT3520

Test: OPCB

Cleanup Date: 04/16/08

Analyst: MF

Client: TNUHANFORD RC-007 K1157

LIMS Report Date: 04/16/08

Solvent: DCM, HEXANE

Adsorbent: H2SO4

Sample No:	Client Name Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0803L832-	TNUHANFORD RC-007 K1157										
005	R1 J16HV7	7	40	1.0		40		1.0	N	0.0	1000.0
0804L918-	BJC BYWO02394A										
003	EMWCW1147	7	1000	1.0		10		1.0	N	0.0	10.00
08LE0175-MB1	PBLKPD	7	1000	1.0		10		1.0	N	0.0	10.00
08LE0175-MB1 -S	PBLKPD	7	1000	1.0	1.0	10		1.0	N	0.0	10.00
08LE0175-MB1 -T	PBLKPD	7	1000	1.0	1.0	10		1.0	N	0.0	10.00

Comments:

Surrogate: 250 UL OLM PSURR 89916405

Spike: 250 UL AR1660 89916602

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
<i>all</i>	<i>[Signature]</i>	<i>4/16/08 1330</i>	<i>SZ</i>	<i>4/16/08 13:30</i>	<i>GC</i>

0000000000

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

803L832

nt TNU HANFORD SAF# RC-007

Final Proj. Sampling Date

ect# 11343-606-001-9999-00

ect Contact/Phone#

ville Laboratory Project Manager

SW846 Del STA TAT 15 day

Rec'd 3-27-08

Date Due 4-11-08

Refrigerator #

#/Type Container

Volume

Preservatives

ANALYSES REQUESTED

A

B

C

D

E

Liquid

Solid

ORGANIC

VOA

BNA

PCB

Herb

TPH

INORG

Metal

#3

TPH

ville Laboratory Use Only

RIX
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

OG 24N

OPCB

OPRG

OG 24N

Mc+O

II 6N

001 J 16 HV3

002 4

003 5

004 6

005 7

W

3-20-08

1345

1355

1735

1750

1815

cial Instructions:

mat ① = HSL - Co, TL + Li, Sa

Special Instructions:

lab report molar w/ ODRD

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>3/27/08</u>	<u>0935</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL	COMPOSITE		
REWRITTEN	WASTED		

0000000009

000000010

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-007-024		Page 1 of 2		
Collector Edmundson/Isom/Perry		Company Contact Tom Edmundson		Telephone No. 376-4058		Project Coordinator KESSNER, JH		Price Code 7K Data Turnaround 15 Days		
Object Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re		Sampling Location 1330-N Waste Pad		SAF No. RC-007						
Chest No. BHI-94		Field Logbook No. EL-1516-12		COA RD4MXX2F00		Method of Shipment Fed Ex				
Shipped To EBERLINE SERVICES (LIONVILLE)		Offsite Property No. A080204		Bill of Lading/Air Bill No. See OSPC						
POSSIBLE SAMPLE HAZARDS/REMARKS Potential Rad J16HV3 + J16HV4 V5 to HV7 - non Rad Special Handling and/or Storage Cool + Preserve		Preservation	HNO3 to pH < 2	HNO3 to pH < 2	None	HNO3 to pH < 2	Cool 4C	HCl or H2SO4 to pH < 2 Cool	None	HCl to pH < 2 Cool 4C
		Type of Container	G/P	G/P	G/P	G/P	aG	aGs*	aG	
		No. of Container(s)	1	1	1	1	1	1	1	1
		Volume	1000mL	1000mL	60mL	300mL 120mL	1000mL 250mL	40mL	250mL 120mL	1000mL
		Gross Alpha; Gross Beta	See item (1) in Special Instructions.	RCF GEA Shipping Screen	See item (2) in Special Instructions.	PCBs - R082	See item (3) in Special Instructions.	Ignitability - 1010	See item (4) in Special Instructions.	
SAMPLE ANALYSIS										
Sample No.	Matrix *	Sample Date	Sample Time							
3HV3	WATER	3-20-08	1345							
3HV4	WATER	3-20-08	1355							
3HV5	WATER	3-20-08	1735							
3HV6	WATER	3-20-08	1750							
3HV7	WATER	3-20-08	1815							
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS						
Acquiesced By/Removed From J.R. Edmundson 3-20-08 2215		Received By/Stored In 1060 Batelle #1C 3-20-08 2215		Pick up and trans-ship RCF samples with these sample sets. * J16HV3 + J16HV4 on page 2 of 2 - used as RCF screen.						
Acquiesced By/Removed From 1060 BATELLE IC 3/26/08 1230		Received By/Stored In Batelle 3/26/08 1230		(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228)						
Acquiesced By/Removed From FED EX 3/26/08 1230		Received By/Stored In FED EX		(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Rhenium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)						
Acquiesced By/Removed From FED EX 3-27-08 0935		Received By/Stored In FED EX 3-27-08 0935		(3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Hexanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total))						
Acquiesced By/Removed From		Received By/Stored In		(4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))						
LABORATORY SECTION		Received By		Title		Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time				
H-EE-011										

000000011

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-007-024		Page 2 of 2		
Collector Edmundson/Isom/Perry		Company Contact Tom Edmundson		Telephone No. 376-4058		Project Coordinator KESSNER, JH		Price Code 7K Data Turnaround 15 Days		
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re		Sampling Location 1330-N Waste Pad		SAF No. RC-007						
Chest No. BHI-94		Field Logbook No. EL-1516-12		COA RD4MXX2F00		Method of Shipment Fed Ex				
Shipped To EBERLINE SERVICES / LIONVILLE REF DAS 3/26/08		Offsite Property No. A080204		Bill of Lading/Air Bill No. See OSPC						
POSSIBLE SAMPLE HAZARDS/REMARKS Potential Rad Special Handling and/or Storage N/A		Preservation	HNO ₃ to pH <2	HNO ₃ to pH <2	None	HNO ₃ to pH <2	Cool 4C	HCl or H ₂ SO ₄ to pH <2 Cool	None	HCl to pH <2 Cool 4C
		Type of Container	G/P	G/P	G/P	G/P	aG	aGs*	G	G
		No. of Container(s)	1	1	0	1	4	3	1	3
		Volume	1000mL	1000mL	60mL 120mL	500mL 120mL	1000mL	40mL	250mL	1000mL
SAMPLE ANALYSIS		Gross Alpha; Gross Beta	See item (1) in Special Instructions.	RCF GEA Shipping Screen	See item (2) in Special Instructions.	PCBs - #082	See item (3) in Special Instructions.	Ignitability - 1010	See item (4) in Special Instructions.	
		JRE 3-20-08	*See below				JRE 3-20-08			
Sample No.	Matrix *	Sample Date	Sample Time							
16HV3	WATER	3-20-08	1345		19309	✓	✓		150ml	
16HV4	WATER	3-20-08	1355		19310	✓	✓		130ml	
16HV5	WATER									
16HV6	WATER									
16HV7	WATER									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS		
Received By/Removed From JRE Edmundson		Date/Time 3-20-08 2215		Received By/Stored In 7060 Battelle		Date/Time 3-20-08 2215		Pick up and trans-ship RCF samples with these sample sets. *ICP Metals container used for RCF screen. Trans-ship to LVL-1		
Received By/Removed From David St. John		Date/Time 3/24/08 0830		Received By/Stored In David St. John		Date/Time 3/24/08 0830		(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228)		
Received By/Removed From David St. John		Date/Time 3/24/08 1010		Received By/Stored In K. Eliason / K. Eliason		Date/Time 3-24-08 1010		(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)		
Received By/Removed From K. Eliason / K. Eliason		Date/Time 3-25-08 1010		Received By/Stored In David St. John		Date/Time 3/25/08 1010		(3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Hexanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total))		
Received By/Removed From David St. John		Date/Time 3/26/08 1230		Received By/Stored In FED EX		Date/Time 3/26/08 1230		(4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))		
Received By/Removed From David St. John		Date/Time 3-27-08 0935		Received By/Stored In V. King		Date/Time 3-27-08 0935				
LABORATORY SECTION		Received By		Title		Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time				

Matrix *

S=Soil
SE=Solid
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

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD
Project/SAFE/BOW/Release #: RC-007

Date: 3-27-08

LvLI Batch #: 0803L832

Sample Custodian: Phil Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?

Carrier

FD Ex

Airbill #

7926 7224 4088

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 plastic bag and easily accessible?

☒ Yes

☐ No

5. Samples received cooled or ambient?

Temp

3.1°

°C

Cooler #

BHI-94

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?
All samples received on COC?

☒ Yes

☐ No

☒ 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?
Short holds taken to wet lab?

☒ Yes

☐ No

☒ Yes

☐ No

☒ N/A

13. VDA, 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?

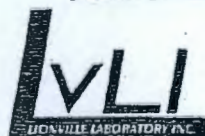
☐ Yes

☐ No

☒ N/A

Person Contacted _____

Date _____



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157



DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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J16HV3

SILVER, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
SILVER, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
SILVER, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
ALUMINUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
ALUMINUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
ALUMINUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
MERCURY, TOTAL	001	W	08C0060	03/20/08	04/07/08	04/08/08
MERCURY, TOTAL	001 REP	W	08C0060	03/20/08	04/07/08	04/08/08
MERCURY, TOTAL	001 MS	W	08C0060	03/20/08	04/07/08	04/08/08
POTASSIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
POTASSIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08

00000001

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
MAGNESIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
MAGNESIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
MAGNESIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
SODIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/14/08
SODIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/14/08
SODIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/14/08
NICKEL, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
NICKEL, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
NICKEL, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	001	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	001 REP	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	001 MS	W	08L0143	03/20/08	04/11/08	04/11/08

J16HV4

SILVER, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
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00000002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
MERCURY, TOTAL	002	W	08C0060	03/20/08	04/07/08	04/08/08
POTASSIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
MAGNESIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
SODIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/14/08
NICKEL, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	002	W	08L0143	03/20/08	04/11/08	04/11/08

J16HV5

SILVER, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
ALUMINUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
MERCURY, TOTAL	003	W	08C0060	03/20/08	04/07/08	04/08/08
POTASSIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08

000000003

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
SODIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/14/08
NICKEL, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	003	W	08L0143	03/20/08	04/11/08	04/11/08

J16HV6

SILVER, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
ALUMINUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
MERCURY, TOTAL	004	W	08C0060	03/20/08	04/07/08	04/08/08
POTASSIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
MAGNESIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
SODIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/14/08
NICKEL, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	004	W	08L0143	03/20/08	04/11/08	04/11/08

J16HV7

SILVER, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
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Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
ARSENIC, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
BARIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
BERYLLIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
CALCIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
CADMIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
CHROMIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
COPPER, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
IRON, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
MERCURY, TOTAL	005	W	08C0060	03/20/08	04/07/08	04/08/08
POTASSIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
LITHIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
MAGNESIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
MANGANESE, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
SODIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/14/08
NICKEL, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
LEAD, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
SILICA, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
ANTIMONY, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
SELENIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
VANADIUM, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08
ZINC, TOTAL	005	W	08L0143	03/20/08	04/11/08	04/11/08

LAB QC:

SILVER LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
SILVER, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
ALUMINUM LABORTORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
ALUMINUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
ARSENIC LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
ARSENIC, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
BARIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
BARIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
BERYLLIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
BERYLLIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
CALCIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
CALCIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
CADMIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08

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Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
CHROMIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
CHROMIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
COPPER LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
COPPER, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
IRON LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
IRON, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
MERCURY LABORATORY	LC1 BS	W	08C0060	N/A	04/07/08	04/08/08
MERCURY, TOTAL	MB1	W	08C0060	N/A	04/07/08	04/08/08
POTASSIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
POTASSIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
LITHIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
LITHIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
MAGNESIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
MAGNESIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
MANGANESE LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
MANGANESE, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
SODIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/14/08
SODIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/14/08
NICKEL LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
NICKEL, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
LEAD LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
LEAD, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
SILICA LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
SILICA, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
ANTIMONY LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
ANTIMONY, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
SELENIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
SELENIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
VANADIUM LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
VANADIUM, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08
ZINC LABORATORY	LC1 BS	W	08L0143	N/A	04/11/08	04/11/08
ZINC, TOTAL	MB1	W	08L0143	N/A	04/11/08	04/11/08

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Analytical Report

Client: TNU-HANFORD RC-007

LVL#: 0803L832

SDG/SAF#: K1157/RC-007

W.O.#: 11343-606-001-9999-00

Date Received: 03-27-08

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.

1. This narrative covers the analyses of 5 water samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were not miscible with water or reagents due to sample matrix. Since the samples were non-miscible, the samples were digested using soil digestion methods with an initial volume instead of weight. Samples for ICP metals have been reported with a 50-fold dilution due to sample matrix.
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 the ICV for Sodium in file TA0411A. All samples were rerun for Sodium in file PS0414A.
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), or samples 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 Silica (7.1%). Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low for Silica.
9. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

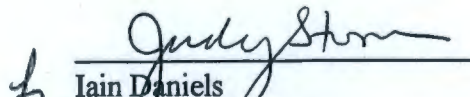
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of **25** pages.



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

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J16HV3	Iron	2,000	100.8

11. The duplicate analyses for 3 analytes were 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.
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
alm/m03-832

4/16/08
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 08031832

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 ^s	200.7 204.2			99
Arsenic	✓6010B 7060A ^s	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 ^s	200.7 213.2			99
Calcium	✓6010B	200.7			99
Chromium	✓6010B 7191 ^s	200.7 218.2			SS17
Cobalt	6010B	200.7			99
Copper	✓6010B 7211 ^s	200.7 220.2			99
Iron	✓6010B	200.7			99
Lead	✓6010B 7421 ^s	200.7 239.2	3113B		99
Lithium	✓6010B 7430 ^s	200.7		1620	99
Magnesium	✓6010B	200.7			99
Manganese	✓6010B	200.7			99
Mercury	7470A ^s ✓7471A ^s	245.1 ² 245.5 ²			99
Molybdenum	6010B	200.7			99
Nickel	✓6010B	200.7			99
Potassium	✓6010B 7610 ^s	200.7 258.1 ⁴			99
Rare Earths	6010B ¹	200.7 ¹		1620	99
Selenium	6010B 7740 ^s	200.7 270.2	3113B		99
Silicon	6010B ¹	200.7		1620	99
Silica	✓6010B	200.7		1620	99
Silver	✓6010B 7761 ^s	200.7 272.2			99
Sodium	✓6010B 7770 ^s	200.7 273.1 ⁴			99
Strontium	6010B	200.7			99
Thallium	6010B 7841 ^s	200.7 279.2 200.9			99
Tin	6010B	200.7			99
Titanium	6010B	200.7			99
Uranium	6010B ¹	200.7 ¹		1620	99
Vanadium	✓6010B	200.7			99
Zinc	✓6010B	200.7			99
Zirconium	6010B ¹	200.7 ¹		1620	99

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	J16HV3	Silver, Total	50.0	u UG/L	50.0	1.0
		Aluminum, Total	2750	UG/L	2000	1.0
		Arsenic, Total	250	u UG/L	250	1.0
		Barium, Total	138	UG/L	50.0	1.0
		Beryllium, Total	25.0	u UG/L	25.0	1.0
		Calcium, Total	11000	UG/L	2000	1.0
		Cadmium, Total	25.0	u UG/L	25.0	1.0
		Chromium, Total	100	u UG/L	100	1.0
		Copper, Total	277	UG/L	100	1.0
		Iron, Total	589000	UG/L	2250	1.0
		Mercury, Total	6.0	u UG/L	6.0	100
		Potassium, Total	2000	u UG/L	2000	1.0
		Lithium, Total	33.5	UG/L	20.0	1.0
		Magnesium, Total	2440	UG/L	1250	1.0
		Manganese, Total	7870	UG/L	20.0	1.0
		Sodium, Total	3990	UG/L	1000	1.0
		Nickel, Total	100	u UG/L	100	1.0
		Lead, Total	325	UG/L	150	1.0
		SILICA , Total	6920	UG/L	4200	2.1
		Antimony, Total	150	u UG/L	150	1.0
		Selenium, Total	300	u UG/L	300	1.0
		Vanadium, Total	70.0	u UG/L	70.0	1.0
		Zinc, Total	2040	UG/L	300	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J16HV4	Silver, Total	50.0	u UG/L	50.0	1.0
		Aluminum, Total	2000	u UG/L	2000	1.0
		Arsenic, Total	250	u UG/L	250	1.0
		Barium, Total	96.0	UG/L	50.0	1.0
		Beryllium, Total	25.0	u UG/L	25.0	1.0
		Calcium, Total	11300	UG/L	2000	1.0
		Cadmium, Total	25.0	u UG/L	25.0	1.0
		Chromium, Total	100	u UG/L	100	1.0
		Copper, Total	100	u UG/L	100	1.0
		Iron, Total	219000	UG/L	2250	1.0
		Mercury, Total	6.0	u UG/L	6.0	100
		Potassium, Total	14100	UG/L	2000	1.0
		Lithium, Total	63.5	UG/L	20.0	1.0
		Magnesium, Total	2900	UG/L	1250	1.0
		Manganese, Total	806	UG/L	20.0	1.0
		Sodium, Total	3110000	UG/L	1000	1.0
		Nickel, Total	100	u UG/L	100	1.0
		Lead, Total	206	UG/L	150	1.0
		SILICA, Total	4200	u UG/L	4200	2.1
		Antimony, Total	192	UG/L	150	1.0
		Selenium, Total	300	u UG/L	300	1.0
		Vanadium, Total	70.0	u UG/L	70.0	1.0
		Zinc, Total	498	UG/L	300	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-003	J16HV5	Silver, Total	50.0	u UG/L	50.0	1.0
		Aluminum, Total	2000	u UG/L	2000	1.0
		Arsenic, Total	250	u UG/L	250	1.0
		Barium, Total	50.5	UG/L	50.0	1.0
		Beryllium, Total	25.0	u UG/L	25.0	1.0
		Calcium, Total	7300	UG/L	2000	1.0
		Cadmium, Total	25.0	u UG/L	25.0	1.0
		Chromium, Total	100	u UG/L	100	1.0
		Copper, Total	100	u UG/L	100	1.0
		Iron, Total	11100	UG/L	2250	1.0
		Mercury, Total	6.0	u UG/L	6.0	100
		Potassium, Total	2000	u UG/L	2000	1.0
		Lithium, Total	38.0	UG/L	20.0	1.0
		Magnesium, Total	1370	UG/L	1250	1.0
		Manganese, Total	68.0	UG/L	20.0	1.0
		Sodium, Total	15500	UG/L	1000	1.0
		Nickel, Total	100	u UG/L	100	1.0
		Lead, Total	326	UG/L	150	1.0
		SILICA , Total	4200	u UG/L	4200	2.1
		Antimony, Total	150	u UG/L	150	1.0
		Selenium, Total	300	u UG/L	300	1.0
		Vanadium, Total	70.0	u UG/L	70.0	1.0
		Zinc, Total	300	u UG/L	300	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L832

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-004	J16HV6	Silver, Total	50.0	u UG/L	50.0	1.0
		Aluminum, Total	2000	u UG/L	2000	1.0
		Arsenic, Total	250	u UG/L	250	1.0
		Barium, Total	54.0	UG/L	50.0	1.0
		Beryllium, Total	25.0	u UG/L	25.0	1.0
		Calcium, Total	3640	UG/L	2000	1.0
		Cadmium, Total	25.0	u UG/L	25.0	1.0
		Chromium, Total	100	u UG/L	100	1.0
		Copper, Total	100	u UG/L	100	1.0
		Iron, Total	245000	UG/L	2250	1.0
		Mercury, Total	6.0	u UG/L	6.0	100
		Potassium, Total	2000	u UG/L	2000	1.0
		Lithium, Total	35.5	UG/L	20.0	1.0
		Magnesium, Total	2000	UG/L	1250	1.0
		Manganese, Total	1390	UG/L	20.0	1.0
		Sodium, Total	6660	UG/L	1000	1.0
		Nickel, Total	100	u UG/L	100	1.0
		Lead, Total	290	UG/L	150	1.0
		SILICA , Total	4200	u UG/L	4200	2.1
		Antimony, Total	150	u UG/L	150	1.0
		Selenium, Total	300	u UG/L	300	1.0
		Vanadium, Total	70.0	u UG/L	70.0	1.0
		Zinc, Total	588	UG/L	300	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-005	J16HV7	Silver, Total	50.0	u UG/L	50.0	1.0
		Aluminum, Total	2430	UG/L	2000	1.0
		Arsenic, Total	250	u UG/L	250	1.0
		Barium, Total	74.0	UG/L	50.0	1.0
		Beryllium, Total	25.0	u UG/L	25.0	1.0
		Calcium, Total	84900	UG/L	2000	1.0
		Cadmium, Total	25.0	u UG/L	25.0	1.0
		Chromium, Total	100	u UG/L	100	1.0
		Copper, Total	1520	UG/L	100	1.0
		Iron, Total	11000	UG/L	2250	1.0
		Mercury, Total	6.0	u UG/L	6.0	100
		Potassium, Total	2000	u UG/L	2000	1.0
		Lithium, Total	43.0	UG/L	20.0	1.0
		Magnesium, Total	7300	UG/L	1250	1.0
		Manganese, Total	101	UG/L	20.0	1.0
		Sodium, Total	5920	UG/L	1000	1.0
		Nickel, Total	100	u UG/L	100	1.0
		Lead, Total	790	UG/L	150	1.0
		SILICA , Total	4200	u UG/L	4200	2.1
		Antimony, Total	150	u UG/L	150	1.0
		Selenium, Total	300	u UG/L	300	1.0
		Vanadium, Total	70.0	u UG/L	70.0	1.0
		Zinc, Total	30600	UG/L	300	1.0

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Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	08L0143-MB1	Silver, Total	50.0	u UG/L	50.0	1.0
		Aluminum, Total	2000	u UG/L	2000	1.0
		Arsenic, Total	250	u UG/L	250	1.0
		Barium, Total	50.0	u UG/L	50.0	1.0
		Beryllium, Total	25.0	u UG/L	25.0	1.0
		Calcium, Total	2000	u UG/L	2000	1.0
		Cadmium, Total	25.0	u UG/L	25.0	1.0
		Chromium, Total	100	u UG/L	100	1.0
		Copper, Total	100	u UG/L	100	1.0
		Iron, Total	5940	UG/L	2250	1.0
		Potassium, Total	2000	u UG/L	2000	1.0
		Lithium, Total	20.0	u UG/L	20.0	1.0
		Magnesium, Total	1250	u UG/L	1250	1.0
		Manganese, Total	22.0	UG/L	20.0	1.0
		Sodium, Total	1150	UG/L	1000	1.0
		Nickel, Total	100	u UG/L	100	1.0
		Lead, Total	176	UG/L	150	1.0
		SILICA , Total	4200	u UG/L	4200	2.1
		Antimony, Total	150	u UG/L	150	1.0
		Selenium, Total	300	u UG/L	300	1.0
		Vanadium, Total	70.0	u UG/L	70.0	1.0
		Zinc, Total	300	u UG/L	300	1.0
BLANK1	08C0060-MB1	Mercury, Total	0.06	u UG/L	0.06	1.0

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Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	J16HV3	Silver, Total	2500	50.0 u	2500	100.0	1.0
		Aluminum, Total	103000	2750	100000	99.8	1.0
		Arsenic, Total	94600	250 u	100000	94.6	1.0
		Barium, Total	100000	138	100000	100.0	1.0
		Beryllium, Total	2470	25.0 u	2500	98.9	1.0
		Calcium, Total	1290000	11000	250000	102.2	1.0
		Cadmium, Total	2500	25.0 u	2500	100.0	1.0
		Chromium, Total	10100	100 u	10000	101.2	1.0
		Copper, Total	13100	277	12500	102.6	1.0
		Iron, Total	652000	589000	50000	126.6*	1.0
		Mercury, Total	222	6.0 u	200	110.8	100
		Potassium, Total	1180000	2000 u	250000	94.6	1.0
		Lithium, Total	52800	33.5	50000	105.6	1.0
		Magnesium, Total	1240000	2440	250000	99.2	1.0
		Manganese, Total	33400	7870	25000	102.2	1.0
		Sodium, Total	1180000	3990	250000	94.0	1.0
		Nickel, Total	24800	100 u	25000	99.1	1.0
		Lead, Total	25200	325	25000	99.5	1.0
		SILICA , Total	96300	6920	107000	83.6	2.1
		Antimony, Total	24300	150 u	25000	97.0	1.0
		Selenium, Total	81000	300 u	100000	81.0	1.0
		Vanadium, Total	24700	70.0 u	25000	98.8	1.0
		Zinc, Total	26500	2040	25000	97.9	1.0

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Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		FACTOR (REP)
=====	=====	=====	=====	=====	=====	=====
-001REP	J16HV3	Silver, Total	50.0 u	50.0 u	NC	1.0
		Aluminum, Total	2750	3030	9.7	1.0
		Arsenic, Total	250 u	250 u	NC	1.0
		Barium, Total	138	126	8.3	1.0
		Beryllium, Total	25.0 u	25.0 u	NC	1.0
		Calcium, Total	11000	13100	17.8	1.0
		Cadmium, Total	25.0 u	25.0 u	NC	1.0
		Chromium, Total	100 u	100 u	NC	1.0
		Copper, Total	277	271	2.2	1.0
		Iron, Total	589000	605000	2.8	1.0
		Mercury, Total	6.0 u	6.0 u	NC	100
		Potassium, Total	2000 u	2000 u	NC	1.0
		Lithium, Total	33.5	21.0	45.9	1.0
		Magnesium, Total	2440	3340	31.2	1.0
		Manganese, Total	7870	7990	1.5	1.0
		Sodium, Total	3990	4110	3.0	1.0
		Nickel, Total	100 u	100 u	NC	1.0
		Lead, Total	325	494	41.3	1.0
		SILICA , Total	6920	7020	1.4	2.1
		Antimony, Total	150 u	150 u	NC	1.0
		Selenium, Total	300 u	300 u	NC	1.0
		Vanadium, Total	70.0 u	70.0 u	NC	1.0
		Zinc, Total	2040	2120	3.8	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/15/08

CLIENT: TNUHANFORD RC-007 K1157

LVL LOT #: 0803L832

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
=====	=====	=====	=====	=====	=====	=====
LCS1	08L0143-LC1	Silver, LCS	24800	25000	UG/L	99.1
		Aluminum, LCS	254000	250000	UG/L	101.7
		Arsenic, LCS	465000	500000	UG/L	92.9
		Barium, LCS	252000	250000	UG/L	100.7
		Beryllium, LCS	12500	12500	UG/L	99.7
		Calcium, LCS	270000	250000	UG/L	101.6
		Cadmium, LCS	12300	12500	UG/L	98.1
		Chromium, LCS	25200	25000	UG/L	100.7
		Copper, LCS	63900	62500	UG/L	102.2
		Iron, LCS	249000	250000	UG/L	99.6
		Potassium, LCS	180000	250000	UG/L	94.5
		Lithium, LCS	260000	250000	UG/L	104.2
		Magnesium, LCS	250000	250000	UG/L	99.8
		Manganese, LCS	38000	37500	UG/L	101.3
		Sodium, LCS	170000	250000	UG/L	93.5
		Nickel, LCS	99400	100000	UG/L	99.4
		Lead, LCS	123000	125000	UG/L	98.7
		SILICA, LCS	38100	535000	UG/L	7.1
		Antimony, LCS	143000	150000	UG/L	95.6
		Selenium, LCS	447000	500000	UG/L	89.5
		Vanadium, LCS	124000	125000	UG/L	99.5
		Zinc, LCS	49000	50000	UG/L	97.9
LCS1	08C0060-LC1	Mercury, LCS	5.6	5.0	UG/L	111.1

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08LP143
Date/Time Initiated: 4/11/08 1045
Date/Time Completed: _____
Analyst(s): nm
Matrix: Soil Water Other: liquid waste
Instr. Type: AA (ICP)
Parameters: see backlog

Method: SW	3005A	DW	200.7 (1994)
(circle)	3010A		200.9
	3015		3113B
	3020A		
	7060A (As/Se)	MCAWW	200.7 (1982)
	7760A (Ag)		200 (AA)
			206.2 (As/Se)
	<u>3050B</u>		
	3051	SM	3030C (NC)

Digested / Undigested (circle one)

Balance #: 2/A

Balance Cal Verif: Y (NA)

Hot Plate Temp:

CLP ILMO3.0
ILMO4.0

Other _____

THU

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
0803L832-001		2ml	107ml		TO	N/A	brown liquid with sediment		
001R									
001S	1.0 ml								
002									
003							white liquid		
004							brown liquid with rediment		
005							cloudy liquid with oil layer		
0820143-MB1							clear colorless		
LC1	1.0 ml								
MW 4/11/08									

Spiking IDs:

MS #: 8100-04-01
02
03
6072-78-07
LCS #: 08
09
10
11

Reagent IDs:

HNO₃
HCL
H₂O₂
1:1 HNO₃
1:1 HCL

File ID#: IC014301

LIMS Transfer: ☒ Y ☐ N
Data Review By/Date: upack

Data Review By/Date:

pmr, 04/11/08

MERCURY PREPARATION

Logbook # 422

Analyst: TEO
Date: 4/17/08
Start Time/Temp: 1535 / 93°
End Time/Temp: 1605 / 92°

Instrument ID: HQ-3.1
Balance #: NA
Pipette Calibration (Daily) Y ☒

Prep Batch: 08C0060
Worksheet: H2040801
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 Initial/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	8T			10mL	50mL	
0.2 µg/L	CB	0.100				
1.0	11A	0.500				
2.0	5T	1.000				
5.0	2B	2.500				
10.0	3H	5.000				
ICV	H	0.125	2.5			
CCV	PT	0.250	5.0			
ICB/CCB	K35					
MBI	HR			0.5mL		PSW160
LCI	WK	0.250	5.0			LCSW160
0803L832-001	700					
WIR	SE					
WIS	SM	1.0	2.0			
002	JB					R
003	N60					
004	WN					
005	PI8					

TEO 4/17/08

Standard:	ID	Prep Date/Time
USMS	<u>TEO 4/17/08</u>	<u>4/17/08 1120</u>
USCV/LCS	<u>R16002-75-0870</u>	
	<u>US6002-75-08A</u>	

Reviewed By/Date: Andrew Maly 4/16/08

see book # 9368 for std traceability information

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

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

Relinquished by	Received by	Date	Time
ORIGINAL		"COMPOST"	
REWRITTEN		"WASTE"	

JRE 3-20-08

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-007-024		Page 1 of 2		
Collector Edmundson/Isom/Perry		Company Contact Tom Edmundson		Telephone No. 376-4058		Project Coordinator KESSNER, JH		Price Code 7K		Data Turnaround 15 Days		
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re		Sampling Location 1330-N Waste Pad		SAF No. RC-007								
Ice Chest No. BHI-94		Field Logbook No. EL-1516-12		COA RD4MXX2F00		Method of Shipment Fed Ex						
Shipped To EBERLINE SERVICES LIONVILLE		Offsite Property No. A080204		Bill of Lading/Air Bill No. See OSPC								
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Potential Rad J16HV3 + J16HV4</i> <i>HV5 to HV7 - non Rad</i> <i>Special Handling and/or Storage</i> <i>Cool + Preserve</i>		Preservation	HNO ₃ to pH <2	HNO ₃ to pH <2	None	HNO ₃ to pH <2	Cool 4C	HCl or H ₂ SO ₄ to pH <2 Cool	None	HCl to pH <2 Cool 4C		
		Type of Container	G/P	G/P	G/P	G/P	aG	aGs*	aG			
		No. of Container(s)	1	1	1	1	1	1	1			
		Volume	1000mL	1000mL	60mL	100mL 120mL	1000mL 250mL	40mL	250mL 120mL	1000mL		
SAMPLE ANALYSIS		Gross Alpha, Gross Beta	See item (1) in Special Instructions.	RCF GEA Shipping Screen	See item (2) in Special Instructions.	PCBs - 8082	See item (3) in Special Instructions.	Ignitability - 1010	See item (4) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time									
J16HV3	WATER	3-20-08	1345				✓	✓	✓	✓		
J16HV4	WATER	3-20-08	1355				✓	✓	✓	✓		
J16HV5	WATER	3-20-08	1735				✓	✓	✓	✓		
J16HV6	WATER	3-20-08	1750				✓	✓	✓	✓		
J16HV7	WATER	3-20-08	1815				✓	✓	✓	✓		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				
Relinquished By/Removed From <i>Tom Edmundson</i>		Date/Time 3-20-08 2215		Received By/Stored In <i>1060 BATELLE IC</i>		Date/Time 3-20-08 2215		Pick up and trans-ship RCF samples with these sample sets. * J16HV3 + J16HV4 on page 2 of 2 - used as RCF screen. (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-123, Barium-133, Radium-226, Radium-228) (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total)) (4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))				
Relinquished By/Removed From <i>David St. John</i>		Date/Time 3/26/08 1230		Received By/Stored In <i>David St. John</i>		Date/Time 3/26/08 1230						
Relinquished By/Removed From <i>David St. John</i>		Date/Time 3/26/08 1230		Received By/Stored In <i>FED EX</i>		Date/Time						
Relinquished By/Removed From <i>David St. John</i>		Date/Time 3-27-08 0935		Received By/Stored In <i>David St. John</i>		Date/Time 3-27-08 0935						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Matrix * S-Solid SE-Sediment SO-Solid SL-Sludge W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other				
LABORATORY SECTION		Received By		Title		Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time						



Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-007 K1157

DATE RECEIVED: 03/27/08

LVL LOT # :0803L832

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16HV3	001	W	08LVG054	03/20/08	N/A	04/02/08
J16HV3	001 MS	W	08LVG054	03/20/08	N/A	04/02/08
J16HV3	001 MSD	W	08LVG054	03/20/08	N/A	04/02/08
J16HV4	002	W	08LVG054	03/20/08	N/A	04/02/08
J16HV5	003	W	08LVG054	03/20/08	N/A	04/02/08
J16HV6	004	W	08LVG054	03/20/08	N/A	04/02/08
J16HV7	005	W	08LVG055	03/20/08	N/A	04/03/08

LAB QC:

VLKXC	MB1	W	08LVG054	N/A	N/A	04/02/08
VLKXC	MB1 BS	W	08LVG054	N/A	N/A	04/02/08
VLKXD	MB1	W	08LVG055	N/A	N/A	04/03/08
VLKXD	MB1 BS	W	08LVG055	N/A	N/A	04/03/08



Case Narrative

Client: TNU-HANFORD RC-007
LVL #: 0803L832
SDG/SAF # K1157/RC-007

W.O. #: 11343-606-001-9999-00
Date Received: 03-27-2008

GC/MS VOLATILE

Five (5) water samples were collected on 03-20-2008.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for Client Specified Volatile target compounds on 04-02, 03-2008.

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:

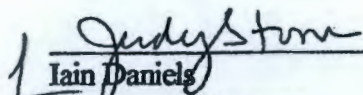
1. Samples were analyzed within required holding time.
2. Non-target compounds were detected in the samples.
3. Sample J16HV05 required a 2-fold instrument dilution.
4. One (1) of thirty-three (33) surrogate recoveries was outside acceptance criteria. Associated matrix spike analyses fulfilled its reanalysis requirement.
5. All matrix spike recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. The method blanks were below the reporting limit for all target compounds.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with 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").

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



10. Spectral searches were performed for 2-Pentanol and Benzyl Alcohol due to the non-availability of a reference standard. These compounds were not detected in these samples.
11. Samples J16HV3, J16HV4, J16HV5 and J16HV6 contained approximately 5mL of headspace, which could affect sample results.
12. The pH of sample J16HV3, J16HV4 and J16HV6 exceeded 2.0, which may indicate the sample may have been improperly preserved.
13. Sample J16HV7 contained an oily like substance on top of the water, analysis was performed on the water phase of the sample.
14. 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.
15. "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

4/14/08
Date

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.
- 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 resolve 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 - Co-elution/ Background: Peak was manually integrated to eliminate contribution from co-eluting compounds, background signal, or other interference.
- PI - Proper Integration: A peak with poor or inconsistent integration (i.e., excessive tail) was properly integrated manually.

Report Date: 05/13/08 13:33

Client: TNUHANFORD RC-007 K1157 Work Order: 11343606001 Page: 1a

Cust ID:		J16HV3	J16HV3	J16HV3	J16HV4	J16HV5	J16HV6
Sample	RFW#:	001	001 MS	001 MSD	002	003	004
Information	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	2.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,2-Dichloroethane-d4		99 %	98 %	91 %	99 %	100 %	101 %
Surrogate Toluene-d8		106 %	111 %	107 %	103 %	103 %	105 %
Recovery Bromofluorobenzene		109 %	117 %	108 %	104 %	110 %	115 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Vinyl Chloride		10 U	90 %	88 %	10 U	20 U	10 U
Methylene Chloride		3 JB	92 %	93 %	3 JB	8 BJ	3 BJ
Acetone		14	96 %	83 %	110	81	130
Carbon Disulfide		5 U	118 %	122 %	5 U	10 U	5 U
1,1-Dichloroethene		5 U	105 %	106 %	5 U	10 U	5 U
1,1-Dichloroethane		5 U	102 %	103 %	1 J	10 U	5 U
1,2-Dichloroethene (total)		5 U	101 %	102 %	5 U	10 U	5 U
Cis-1,2-dichloroethene		5 U	102 %	102 %	5 U	10 U	5 U
Trans-1,2-dichloroethene		5 U	100 %	102 %	5 U	10 U	5 U
Chloroform		5 U	98 %	100 %	5 U	10 U	5 U
1,2-Dichloroethane		5 U	94 %	93 %	5 U	10 U	5 U
2-Butanone		10 U	106 %	91 %	17	7 J	10 U
1,1,1-Trichloroethane		5 U	95 %	97 %	5 U	10 U	5 U
Carbon Tetrachloride		5 U	90 %	95 %	5 U	10 U	5 U
Trichloroethene		5 U	102 %	107 %	5 U	10 U	5 U
1,1,2-Trichloroethane		5 U	105 %	104 %	5 U	10 U	5 U
Benzene		5 U	97 %	99 %	5 U	14	5 U
4-Methyl-2-pentanone		10 U	110 %	98 %	10 U	20 U	10 U
2-Hexanone		10 U	105 %	94 %	10 U	20 U	10 U
Tetrachloroethene		5 U	102 %	108 %	5 U	10 U	5 U
Toluene		5 U	109 %	114 %	5 U	210	5 U
Chlorobenzene		5 U	102 %	104 %	5 U	10 U	5 U
1,3- and 1,4-Xylene		5 U	104 %	108 %	5 U	320	5 U
1,2-Xylene		5 U	111 %	114 %	5 U	190	5 U
Xylene (total)		5 U	106 %	110 %	5 U	510	5 U
N-Butanol		250 U	250 U	250 U	250 U	500 U	250 U
Propionitrile (Ethyl Cyanide)		50 U	50 U	50 U	50 U	100 U	50 U

*= Outside of EPA CLP QC limits.

6A

Lionville Laboratory, Inc.

Volatiles by GC/MS, Appendix IX List

Report Date: 04/11/08 11:36

RFW Batch Number: 0803L832

Client: TNUHANFORD RC-007 K1157 Work Order: 11343606001 Page: 2a

	Cust ID:	J16HV7	VBLKXC	VBLKXC BS	VBLKXD	VBLKXD BS					
Sample	RFW#:	005	08LVG054-MB1	08LVG054-MB1	08LVG055-MB1	08LVG055-MB1					
Information	Matrix:	WATER	WATER	WATER	WATER	WATER					
	D.F.:	1.00	1.00	1.00	1.00	1.00					
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L					
	1,2-Dichloroethane-d4	91	%	105	%	99	%	88	%	95	%
Surrogate	Toluene-d8	108	%	109	%	110	%	96	%	108	%
Recovery	Bromofluorobenzene	106	%	112	%	112	%	100	%	110	%
		-----fl		-----fl		-----fl		-----fl		-----fl	
Vinyl Chloride		10	U	10	U	82	%	10	U	84	%
Methylene Chloride		5	JB	4	J	81	%	4	J	89	%
Acetone		11		10	U	126	%	10	U	98	%
Carbon Disulfide		5	U	5	U	111	%	5	U	116	%
1,1-Dichloroethene		5	U	5	U	96	%	5	U	103	%
1,1-Dichloroethane		5	U	5	U	91	%	5	U	99	%
1,2-Dichloroethene (total)		5	U	5	U	90	%	5	U	98	%
Cis-1,2-dichloroethene		5	U	5	U	90	%	5	U	99	%
Trans-1,2-dichloroethene		5	U	5	U	90	%	5	U	98	%
Chloroform		3	J	5	U	89	%	5	U	96	%
1,2-Dichloroethane		5	U	5	U	86	%	5	U	92	%
2-Butanone		5	J	10	U	85	%	10	U	101	%
1,1,1-Trichloroethane		5	U	5	U	87	%	5	U	92	%
Carbon Tetrachloride		5	U	5	U	86	%	5	U	90	%
Trichloroethene		5	U	5	U	92	%	5	U	103	%
1,1,2-Trichloroethane		5	U	5	U	90	%	5	U	98	%
Benzene		1	J	5	U	87	%	5	U	95	%
4-Methyl-2-pentanone		3	J	10	U	92	%	10	U	103	%
2-Hexanone		10	U	10	U	93	%	10	U	96	%
Tetrachloroethene		5	U	5	U	90	%	5	U	100	%
Toluene		5	J	5	U	96	%	5	U	102	%
Chlorobenzene		5	U	5	U	92	%	5	U	98	%
1,3- and 1,4-Xylene		4	J	5	U	94	%	5	U	101	%
1,2-Xylene		2	J	5	U	98	%	5	U	108	%
Xylene (total)		6		5	U	95	%	5	U	104	%
N-Butanol		250	U	250	U	250	U	250	U	250	U
Propionitrile (Ethyl Cyanide)		50	U	50	U	50	U	50	U	50	U

*- Outside of EPA CLP QC limits.

100000000

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J16HV3

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 0803L832-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: g040207

Level: - (low/med) LOW

Date Received: 03/27/08

% Moisture: not dec. _____

Date Analyzed: 04/02/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J16HV4

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 08031832-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: q040208

Level: (low/med) LOW

Date Received: 03/27/08

% Moisture: not dec. _____

Date Analyzed: 04/02/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.244	80	J
2.	UNKNOWN	20.428	10	J
3.	UNKNOWN	20.598	10	J
4.	UNKNOWN	20.635	6	J
5.	UNKNOWN	20.884	5	

FORM 1 VOA-TIC

1/87 Rev.

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1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J16HV5

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 0803L832-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: g040209

Level: (low/med) LOW

Date Received: 03/27/08

% Moisture: not dec. _____

Date Analyzed: 04/02/08

Column: (pack/cap) CAP

Dilution Factor: 2.00

Number TICs found: 13

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	C3-ALKYLBENZENE	20.300	100	J
2.	TRIMETHYLBENZENE	20.495	300	J
3.	TRIMETHYLBENZENE	20.976	200	J
4.	C4-ALKYLBENZENE	21.219	200	J
5.	C4-ALKYLBENZENE	22.150	90	J
6.	ALKANE	22.375	90	J
7.	C4-ALKYLBENZENE	22.648	100	J
8.	AROMATIC	22.697	100	J
9.	AROMATIC	22.916	100	J
10.	AROMATIC	23.233	100	J
11. 91203	NAPHTHALENE	23.567	400	NJ
12.	METHYLNAPHTHALENE	25.234	300	J
13.	METHYLNAPHTHALENE	25.611	200	J

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1/87 Rev.

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1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J16HV6

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 0803L832-004

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: g040210

Level: (low/med) LOW

Date Received: 03/27/08

% Moisture: not dec. _____

Date Analyzed: 04/02/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	DIMETHYLNAPHTHALENE	20.282	10	J
2.	DIMETHYLNAPHTHALENE	20.440	6	J
3. 91203	NAPHTHALENE	23.567	6	NJ
4.	METHYLNAPHTHALENE	25.240	10	J
5.	METHYLNAPHTHALENE	25.618	8	J

FORM 1 VOA-TIC

1/87 Rev.

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1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J16HV7

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 0803L832-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: q040307

Level: (low/med) LOW

Date Received: 03/27/08

% Moisture: not dec. _____

Date Analyzed: 04/03/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.	UNKNOWN	21.042	10	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKXC

Lab Name: Lionville Labs, Inc. Contract: 11343606001 ...

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 08LVG054-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: q040204

Level: (low/med) LOW

Date Received: 04/02/08

% Moisture: not dec. _____

Date Analyzed: 04/02/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.590	20	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKXD

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 08LVG055-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: c040304

Level: (low/med) LOW

Date Received: 04/03/08

% Moisture: not dec. _____

Date Analyzed: 04/03/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.	UNKNOWN	21.590	10	J



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

7803L832

Client TNU HANFORD SAFE RC-007
 st. Final Proj. Sampling Date
 Project# 11343-606-001-9999-00
 Project Contact/Phone#
 Ionville Laboratory Project Manager O Johnson
 C SW846 Del STA TAT 15 day

ate Rec'd 3-27-08 Date Due 4-11-08

Refrigerator #	A	B	C	D	E
	6	3	3	3	3
#/Type Container	16	16	16	16	16
Volume	40	250	100	125	
Preservatives	HCL		HCL	HCL	
ANALYSES REQUESTED	ORGANIC VOA BNA MCV PCB Herb INORG Metals				

Lab ID	Client ID/Description	Matrix QO Chosen (✓)		Matrix	Date Collected	Time Collected	Ionville Laboratory Use Only									
		MS	MSD				OG 24N	OPCB	OPRG	McT	ITGN					
001	J16 HV3			W	3-20-08	1345	X	X	X	X	X					
002	4					1355	X	X	X	X	X					
003	5					1735	X	X	X	X	X					
004	6					1750	X	X	X	X	X					
005	7					1815	X	X	X	X	X					

Special Instructions:

Mat ① = HSL-Co, TL + Li, Sa

Special Instructions:

1. lab report Molar w/ ODRD

Relinquished by	Received by	Date	Time
<u>ESD</u>	<u>[Signature]</u>	<u>3/27/08</u>	<u>0935</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL	REWRITTEN	COMPOSITE	MADE

000000015

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-007-024		Page 1 of 2	
Collector Edmundson/Ison/Perry		Company Contact Tom Edmundson		Telephone No. 376-4058		Project Coordinator KESSNER, JH		Price Code 7K		Data Turnaround 15 Days	
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re		Sampling Location 1330-N Waste Pad		SAF No. RC-007							
Ice Chest No. BHI-94		Field Logbook No. EL-1516-12		COA RD4MXX2F00		Method of Shipment Fed Ex					
Shipped To EBERLINE SERVICES LIONVILLE		Offsite Property No. A080204		Bill of Lading/Air Bill No. See OSCP							
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Potential Rad J16HV3 + J16HV4</i> <i>HV5 to HV7 - non Rad</i> <i>Special Handling and/or Storage</i> <i>Cool + Preserve</i>		Preservation	HNO3 to pH <2	HNO3 to pH <2	None	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Cool	None	HCl to pH <2 Cool 4C	
		Type of Container	G/P	G/P	G/P	G/P	AG	AG*	AG		
		No. of Container(s)	1	1	1	1	51	51	1	51	<i>RE 3-20-08</i>
		Volume	1000mL	1000mL	60mL	~300mL 120mL	1000mL 250mL	40mL	~250mL 125mL	1000mL	
		Gross Alpha: Gross Beta	See item (1) in Special Instructions.	RCF GEA Shipping Screen	See item (2) in Special Instructions.	PCBs - 8082	See item (3) in Special Instructions.	Ignitability - 1010	See item (4) in Special Instructions.		
SAMPLE ANALYSIS											
Sample No.	Matrix *	Sample Date	Sample Time								
J16HV3	WATER	3-20-08	1345				✓	✓	✓	✓	
J16HV4	WATER	3-20-08	1355				✓	✓	✓	✓	
J16HV5	WATER	3-20-08	1735			✓	✓	✓	✓	✓	
J16HV6	WATER	3-20-08	1750			✓	✓	✓	✓	✓	
J16HV7	WATER	3-20-08	1815			✓	✓	✓	✓	✓	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Squashed By/Removed From <i>JR Edmundson</i>		Date/Time 3-20-08 2215		Received By/Stored In <i>1060 BATELLE #1C</i>		Date/Time 3-20-08 2215		Pick up and trans-ship RCF samples with these sample sets. <i>* J16HV3 + J16HV4 on page 2 of 2 - used as RCF screen.</i> (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228) (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butene, 2-Butene, 2-Butanone, 2-Hexanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total)) (4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))			
Squashed By/Removed From <i>DAVID STADTMAN</i>		Date/Time 3/26/08 1230		Received By/Stored In <i>DAVID STADTMAN</i>		Date/Time 3/26/08 1230					
Squashed By/Removed From <i>DAVID STADTMAN</i>		Date/Time 3/26/08 1230		Received By/Stored In <i>FED EX</i>		Date/Time					
Squashed By/Removed From <i>DAVID STADTMAN</i>		Date/Time 3-27-08 0935		Received By/Stored In <i>DAVID STADTMAN</i>		Date/Time 3-27-08 0935					
Squashed By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Squashed By/Removed From		Date/Time		Received By/Stored In		Date/Time		Matrix * S-Soil SS-Sediment SO-Solid SL-Slag W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WP-Wipe L-Liquid V-Vegetation X-Other			
Squashed By/Removed From		Date/Time		Received By/Stored In		Date/Time					
LABORATORY SECTION		Received By		Title				Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time			

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-007-024		Page 2 of 2							
Collector Edmundson/Isom/Perry		Company Contact Tom Edmundson		Telephone No. 376-4058		Project Coordinator KESSNER, JH		Price Code 7K Data Turnaround 15 Days							
Project Designation 100-N Ancillary Facilities & 190-DR ETF Analytical Data Re		Sampling Location 1330-N Waste Pad		SAF No. RC-007											
Ice Chest No. BHI-94		Field Logbook No. EL-1516-12		COA RD4MXX2F00		Method of Shipment Fed Ex									
Shipped To EBERLINE SERVICES / LIONVILLE REF 3/26/08		Offsite Property No. A080204		Bill of Lading/Air Bill No. See OSPC											
POSSIBLE SAMPLE HAZARDS/REMARKS Potential Rad Special Handling and/or Storage N/A		Preservation		HNO3 to pH < 2	HNO3 to pH < 2	None	HNO3 to pH < 2	Cool 4C	HCl or H2SO4 to pH < 2 Cool 4C	None	HCl to pH < 2 Cool 4C				
		Type of Container:		G/P	G/P	G/P	G/P	aG	aGs*	G	AG				
		No. of Container(s)		1	1	0	1	4	3	1	3				
		Volume		1000mL	1000mL	60mL 120mL	500mL 120mL	1000mL	40mL	250mL	1000mL				
				Gross Alpha; Gross Beta	See item (1) in Special Instructions	RCF GEA Shipping Screen	See item (2) in Special Instructions	PCBs - 8082	See item (3) in Special Instructions	Ignitability - 1010	See item (4) in Special Instructions				
SAMPLE ANALYSIS															
Sample No.		Matrix *		Sample Date		Sample Time									
J16HV3		WATER		3-20-08		1345		19309 ✓ ✓ 150mL							
J16HV4		WATER		3-20-08		1355		19310 ✓ ✓ 130mL							
J16HV5		WATER													
J16HV6		WATER													
J16HV7		WATER													
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From Tom Edmundson		Date/Time 3-20-08 2215		Received By/Stored In 1060 Butelle		Date/Time 3-20-08 2215		Pick up and trans-ship RCF samples with these sample acts. *ICP Metals container used for RCF screen. Trans-ship to LVL-1 (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Barium-133, Radium-226, Radium-228) (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Antimony, Beryllium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Silica, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (3) VOA - 8260A (ETF) (1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1-Butanol, 2-Butanol, 2-Hexanone, 2-Pentanone, 4-Methyl-2-Pentanone, Acetone, Benzene, Benzyl alcohol, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethylene, Ethyl cyanide, Methylenechloride, Tetrachloroethene, Toluene, trans-1,2-Dichloroethylene, Trichloroethene, Vinyl chloride, Xylenes (total)) (4) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range); TPH-Diesel Range - WTPH-D - Add On (Total petroleum hydrocarbons - motor oil (high boiling))				B-Soil SE-Sediment SO-Solid SL-Sludge W - Water O-Oil A-Air DS-Dry Solid DL-Dry Liquid T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other			
Relinquished By/Removed From David Stinson		Date/Time 3/24/08 0830		Received By/Stored In David Stinson		Date/Time 3/24/08 0830									
Relinquished By/Removed From David Stinson		Date/Time 3/24/08 1010		Received By/Stored In K. Elison / K. Elison		Date/Time 3-24-08 1010									
Relinquished By/Removed From K. Elison / R. Elison		Date/Time 3-25-08 1010		Received By/Stored In David Stinson		Date/Time 3/25/08 1010									
Relinquished By/Removed From David Stinson		Date/Time 3/26/08 1230		Received By/Stored In FED EX		Date/Time									
Relinquished By/Removed From David Stinson		Date/Time 3-27-08 0935		Received By/Stored In V. Elison		Date/Time 3-27-08 0935									
LABORATORY SECTION		Received By				Title		Date/Time							
FINAL SAMPLE DISPOSITION		Disposal Method						Disposed By						Date/Time	

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD
Project/SAFE/ROW/Release #: RC-007

Date: 3-27-08

LvLI Batch #: 0803L832

Sample Custodian: W. H. H. H.

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered <u>or Shipped?</u> | Carrier <u>FD Ex</u> | Airbill # <u>7726 7224 4088</u> |
| 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 plastic bag and easily accessible? | ☒ Yes ☐ No | |
| 5. Samples received cooled or ambient? | Temp <u>3.1</u> °C | Cooler # <u>BHI-94</u> |
| 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. <u>VPA</u> 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 _____ | |

