

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0150 was composed of two water samples designated under SAF No. RC-010 with a Project Designation of: ERDF Semiannual Leachate Analysis.

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 February 13, 2006.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

The gross alpha LCS (68%) was below the contract lower limit of 70%. No other problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Iodine-129 Analysis

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.5 Total Radium Analysis

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analysis

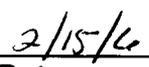
No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0150

SDG 7358
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG K0150

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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SAMPLE DELIVERY GROUP K0150

SDG 7358
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG K0150

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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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

LAB SAMPLE SUMMARY

SDG 7358
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Client Hanford
 Contract No. 630
 Case no SDG K0150

LAB						CHAIN OF	
SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CUSTODY	COLLECTED
R512142-01	J10V58	ERDF	WATER		RC-010	RC-010-1	12/21/05 10:44
R512142-02	J10V59	ERDF	WATER		RC-010	RC-010-1	12/21/05 10:38
R512142-03	Lab Control Sample		WATER		RC-010		
R512142-04	Method Blank		WATER		RC-010		
R512142-05	Duplicate (R512142-01)	ERDF	WATER		RC-010		12/21/05 10:44
R512142-06	Spike (R512142-02)	ERDF	WATER		RC-010		12/21/05 10:38

LAB SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

SDG 7358
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG K0150

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7358	RC-010-1	J10V58	WATER		6.5 L		12/23/05 2	R512142-01	7358-001
		J10V59	WATER		6.5 L		12/23/05 2	R512142-02	7358-002
		Method Blank	WATER					R512142-04	7358-004
		Lab Control Sample	WATER					R512142-03	7358-003
		Duplicate (R512142-01)	WATER		6.5 L		12/23/05 2	R512142-05	7358-005
		Spike (R512142-02)	WATER		6.5 L		12/23/05 2	R512142-06	7358-006

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

SDG 7358
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG K0150

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS	
Beta Counting									
TC	WATER	Technetium 99 in Water	7131-011	10.0	2		1	1	1/1
Gas Proportional Counting									
RAT	WATER	Total Alpha Radium in Water	7131-011	5.0	2		1	1	1/1
Gas Proportional Counting									
93A	WATER	Gross Alpha in Water	7131-011	20.0	2		1	1	1/1
93B	WATER	Gross Beta in Water	7131-011	15.0	2		1	1	1/1
Gamma Spectroscopy									
I	WATER	Iodine 129 in Water	7131-011	5.0	2		1	1	1/1
Kinetic Phosphorimetry (KPA)									
U_T	WATER	Uranium, Total in Water	7131-011	9.0	2		1	1	1/1
Liquid Scintillation Counting									
C	WATER	Carbon 14 in Water	7131-011	10.0	2		1	1	1/1 1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

SDG 7358
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG K0150

LAB WORK SUMMARY

LAB SAMPLE	CLIENT SAMPLE ID				SUF-					
COLLECTED	LOCATION	MATRIX			FIX	ANALYZED	REVIEWED	BY	METHOD	
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST						
R512142-01	J10V58		7358-001	93A/93		01/24/06	02/10/06	MWT	Gross Alpha in Water	
12/21/05	ERDF		7358-001	93B/93		01/24/06	02/10/06	MWT	Gross Beta in Water	
12/23/05	RC-010-1	RC-010	7358-001	C		01/22/06	02/10/06	MWT	Carbon 14 in Water	
			7358-001	I		02/01/06	02/10/06	MWT	Iodine 129 in Water	
			7358-001	RAT		01/23/06	02/10/06	MWT	Total Alpha Radium in Water	
			7358-001	TC		01/23/06	02/10/06	MWT	Technetium 99 in Water	
			7358-001	U_T		01/23/06	02/10/06	MWT	Uranium, Total in Water	
R512142-02	J10V59		7358-002	93A/93		01/24/06	02/10/06	MWT	Gross Alpha in Water	
12/21/05	ERDF		7358-002	93B/93		01/24/06	02/10/06	MWT	Gross Beta in Water	
12/23/05	RC-010-1	RC-010	7358-002	C		01/22/06	02/10/06	MWT	Carbon 14 in Water	
			7358-002	I		02/06/06	02/10/06	MWT	Iodine 129 in Water	
			7358-002	RAT		01/23/06	02/10/06	MWT	Total Alpha Radium in Water	
			7358-002	TC		01/23/06	02/10/06	MWT	Technetium 99 in Water	
			7358-002	U_T		01/23/06	02/10/06	MWT	Uranium, Total in Water	
R512142-03	Lab Control Sample		7358-003	93A/93		01/24/06	02/10/06	MWT	Gross Alpha in Water	
			7358-003	93B/93		01/24/06	02/10/06	MWT	Gross Beta in Water	
		RC-010	7358-003	C		01/22/06	02/10/06	MWT	Carbon 14 in Water	
			7358-003	I		02/02/06	02/10/06	MWT	Iodine 129 in Water	
			7358-003	RAT		01/21/06	02/10/06	MWT	Total Alpha Radium in Water	
			7358-003	TC		01/23/06	02/10/06	MWT	Technetium 99 in Water	
			7358-003	U_T		01/23/06	02/10/06	MWT	Uranium, Total in Water	
R512142-04	Method Blank		7358-004	93A/93		01/24/06	02/10/06	MWT	Gross Alpha in Water	
			7358-004	93B/93		01/24/06	02/10/06	MWT	Gross Beta in Water	
		RC-010	7358-004	C		01/22/06	02/10/06	MWT	Carbon 14 in Water	
			7358-004	I		02/06/06	02/10/06	MWT	Iodine 129 in Water	
			7358-004	RAT		01/23/06	02/10/06	MWT	Total Alpha Radium in Water	
			7358-004	TC		01/24/06	02/10/06	MWT	Technetium 99 in Water	
			7358-004	U_T		01/23/06	02/10/06	MWT	Uranium, Total in Water	
R512142-05	Duplicate (R512142-01)		7358-005	93A/93		01/24/06	02/10/06	MWT	Gross Alpha in Water	
12/21/05	ERDF		7358-005	93B/93		01/24/06	02/10/06	MWT	Gross Beta in Water	
12/23/05		RC-010	7358-005	C		01/23/06	02/10/06	MWT	Carbon 14 in Water	
			7358-005	I		02/03/06	02/10/06	MWT	Iodine 129 in Water	
			7358-005	RAT		01/23/06	02/10/06	MWT	Total Alpha Radium in Water	
			7358-005	TC		01/25/06	02/10/06	MWT	Technetium 99 in Water	
			7358-005	U_T		01/23/06	02/10/06	MWT	Uranium, Total in Water	

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

WORK SUMMARY, cont.

SDG 7358
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG K0150

LAB SAMPLE	CLIENT SAMPLE ID	COLLECTED	LOCATION	MATRIX	SUP-	RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD
R512142-06	Spike (R512142-02)								7358-006	C		01/23/06	02/10/06	MWT	Carbon 14 in Water
		12/21/05	ERDF	WATER											
		12/23/05						RC-010							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	RC-010	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
93B/93	RC-010	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
C	RC-010	Carbon 14 in Water	C14_CHEM_LSC	2			1	1	1	1	6
I	RC-010	Iodine 129 in Water	I129_SEP_LEPS_GS	2			1	1	1		5
RAT	RC-010	Total Alpha Radium in Water	RATOT_GPC	2			1	1	1		5
TC	RC-010	Technetium 99 in Water	TC99_TR_SEP_GPC	2			1	1	1		5
U_T	RC-010	Uranium, Total in Water	UTOT_KPA	2			1	1	1		5
TOTALS				14			7	7	7	1	36

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

7358-005

J10V58

DUPLICATE

SDG <u>7358</u>		Client/Case no <u>Hanford</u>	<u>SDG K0150</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE	ORIGINAL		
Lab sample id <u>R512142-05</u>	Lab sample id <u>R512142-01</u>	Client sample id <u>J10V58</u>	
Dept sample id <u>7358-005</u>	Dept sample id <u>7358-001</u>	Location/Matrix <u>ERDF</u>	<u>WATER</u>
	Received <u>12/23/05</u>	Collected/Volume <u>12/21/05 10:44</u>	<u>6.5 L</u>
		Custody/SAF No <u>RC-010-1</u>	<u>RC-010</u>

ANALYTE	DUPLICATE		MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	DER σ
	pCi/L	2σ ERR (COUNT)					pCi/L	2σ ERR (COUNT)					
Gross Alpha	306	30	<u>8.3</u>	3.0		93A	340	32	<u>8.1</u>		11	47	0.7
Gross Beta	459	15	<u>6.5</u>	4.0		93B	471	15	<u>6.2</u>		3	33	0.2
Carbon 14	14.0	45	75	200	U	C	25.3	47	79	U	-		0.3
Technetium 99	527	14	5.2	15		TC	612	13	4.2		15	22	2.0
Total Uranium (ug/L)	760	91	<u>4.1</u>	0.10		U_T	754	90	<u>4.1</u>		1	32	0.1
Total Radium	0.020	0.14	0.57	1.0	U	RAT	0.135	0.17	0.57	U	-		1.0
Iodine 129	3.37	6.5	<u>15</u>	5.0	U	I	0.844	3.7	<u>8.5</u>	U	-		0.7

ERDF Semiannual Leachate Analysis

QC-DUP#1 55713

DUPLICATES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

7358-006

J10V59

MATRIX SPIKE

SDG <u>7358</u>		Client/Case no <u>Hanford</u>	<u>SDG K0150</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
MATRIX SPIKE	ORIGINAL		
Lab sample id <u>R512142-06</u>	Lab sample id <u>R512142-02</u>	Client sample id <u>J10V59</u>	
Dept sample id <u>7358-006</u>	Dept sample id <u>7358-002</u>	Location/Matrix <u>ERDF</u>	<u>WATER</u>
	Received <u>12/23/05</u>	Collected/Volume <u>12/21/05 10:38</u>	<u>6.5 L</u>
		Custody/SAF No <u>RC-010-1</u>	<u>RC-010</u>

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC 3σ % (TOTAL)	LMTS (TOTAL)	PROTOCOL LIMITS
Carbon 14	30100	310	83	200	C	31900	1300	12.8	45	94	85-115	60-140

ERDF Semiannual Leachate Analysis

QC-MS#2 55714

MATRIX SPIKES

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0150

7358-001

J10V58

DATA SHEET

SDG <u>7358</u>	Client/Case no <u>Hanford</u>	<u>SDG K0150</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R512142-01</u>	Client sample id <u>J10V58</u>	
Dept sample id <u>7358-001</u>	Location/Matrix <u>ERDF</u>	<u>WATER</u>
Received <u>12/23/05</u>	Collected/Volume <u>12/21/05 10:44</u>	<u>6.5 L</u>
	Custody/SAF No <u>RC-010-1</u>	<u>RC-010</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	340	32	<u>8.1</u>	3.0		93A
Gross Beta	12587-47-2	471	15	<u>6.2</u>	4.0		93B
Carbon 14	14762-75-5	25.3	47	79	200	U	C
Technetium 99	14133-76-7	612	13	4.2	15		TC
Total Uranium (ug/L)	7440-61-1	754	90	<u>4.1</u>	0.10		U_T
Total Radium	ALPHA-RA	0.135	0.17	0.57	1.0	U	RAT
Iodine 129	15046-84-1	0.844	3.7	<u>8.5</u>	5.0	U	I

ERDF Semiannual Leachate Analysis

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0150

7358-002

J10V59

DATA SHEET

SDG <u>7358</u>	Client/Case no <u>Hanford</u>	<u>SDG K0150</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R512142-02</u>	Client sample id <u>J10V59</u>	
Dept sample id <u>7358-002</u>	Location/Matrix <u>ERDF</u>	<u>WATER</u>
Received <u>12/23/05</u>	Collected/Volume <u>12/21/05 10:38</u>	<u>6.5 L</u>
	Custody/SAF No <u>RC-010-1</u>	<u>RC-010</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	444	37	<u>8.8</u>	3.0		93A
Gross Beta	12587-47-2	530	15	<u>4.7</u>	4.0		93B
Carbon 14	14762-75-5	12.8	45	76	200	U	C
Technetium 99	14133-76-7	631	13	4.3	15		TC
Total Uranium (ug/L)	7440-61-1	941	110	<u>4.1</u>	0.10		U_T
Total Radium	ALPHA-RA	-0.020	0.097	0.44	1.0	U	RAT
Iodine 129	15046-84-1	0.951	3.2	<u>7.2</u>	5.0	U	I

ERDF Semiannual Leachate Analysis

DATA SHEETS

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

LAB METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Test TC Matrix WATER
 SDG 7358
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG K0150

RESULTS

LAB RAW SUF- Technetium
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID 99

Preparation batch 7131-011

R512142-01		7358-001	J10V58	612
R512142-02		7358-002	J10V59	631
R512142-03		7358-003	LCS (QC ID=55711)	ok
R512142-04		7358-004	BLK (QC ID=55712)	U
R512142-05		7358-005	Duplicate (R512142-01)	ok

Nominal values and limits from method RDLs (pCi/L) 15

ERDF Semiannual Leachate Analysis

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 YZED DETECTOR

Preparation batch 7131-011 2σ prep error 10.0 % Reference Lab Notebook 7131 pg. 11

R512142-01		J10V58	4.2	0.100			91	100		33	01/20/06	01/23	GRB-225
R512142-02		J10V59	4.3	0.100			101	100		33	01/20/06	01/23	GRB-226
R512142-03		LCS (QC ID=55711)	3.5	0.100			104	100			01/20/06	01/23	GRB-227
R512142-04		BLK (QC ID=55712)	5.0	0.100			97	83			01/20/06	01/24	GRB-226
R512142-05		Duplicate (R512142-01)	5.2	0.100			99	50		35	01/20/06	01/25	GRB-223
		(QC ID=55713)											

Nominal values and limits from method 15 0.100 20-105 50 180

PROCEDURES REFERENCE TC99_TR_SEP_GPC
 CP-431 Technetium-99 Purification of Soil or Resin by
 Extraction Chromatography, rev 2
 CP-008 Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD MDA 4.4 ± 1.4
 FOR 5 SAMPLES YIELD 98 ± 10

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

LAB METHOD SUMMARY

TOTAL ALPHA RADIUM IN WATER
GAS PROPORTIONAL COUNTING

Test RAT Matrix WATER
SDG 7358
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG K0150

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Total Radium	
Preparation batch 7131-011					
R512142-01		7358-001	J10V58	U	
R512142-02		7358-002	J10V59	U	
R512142-03		7358-003	LCS (QC ID=55711)	<u>LOW</u>	
R512142-04		7358-004	BLK (QC ID=55712)	U	
R512142-05		7358-005	Duplicate (R512142-01)	-	U

Nominal values and limits from method RDLs (pCi/L) 1.0
ERDF Semiannual Leachate Analysis

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	YZED	DETECTOR
Preparation batch 7131-011 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 11															
R512142-01		J10V58	0.57	0.200			96		100			33	01/19/06	01/23	GAW-209
R512142-02		J10V59	0.44	0.200			94		100			33	01/19/06	01/23	GAW-114
R512142-03		LCS (QC ID=55711)	0.64	0.200			94		100				01/19/06	01/21	GAW-114
R512142-04		BLK (QC ID=55712)	0.60	0.200			93		100				01/19/06	01/23	GAW-115
R512142-05		Duplicate (R512142-01) (QC ID=55713)	0.57	0.200			96		100			33	01/19/06	01/23	GAW-209

Nominal values and limits from method 1.0 0.200 20-105 100 180

PROCEDURES REFERENCE RATOT_GPC
DWP-880 Total Radium in Drinking Water, rev 0

AVERAGES ± 2 SD MDA 0.56 ± 0.15
FOR 5 SAMPLES YIELD 95 ± 3

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

Test 93A Matrix WATER
 SDG 7358
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford
 Contract No. 630
 Contract SDG K0150

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Gross Alpha
Preparation batch 7131-011					
R512142-01	93	7358-001	J10V58		340
R512142-02	93	7358-002	J10V59		444
R512142-03	93	7358-003	LCS (QC ID=55711)		<u>LOW</u>
R512142-04	93	7358-004	BLK (QC ID=55712)		U
R512142-05	93	7358-005	Duplicate (R512142-01)		ok

Nominal values and limits from method RDLs (pCi/L) 3.0
 ERDF Semiannual Leachate Analysis

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 7131-011 2σ prep error 20.0 % Reference Lab Notebook 7131 pg. 11															
R512142-01	93	J10V58	<u>8.1</u>	0.110			190	100				34	01/24/06	01/24	GRB-105
R512142-02	93	J10V59	<u>8.8</u>	0.135			244	100				34	01/24/06	01/24	GRB-109
R512142-03	93	LCS (QC ID=55711)	<u>4.6</u>	0.100			63	100					01/24/06	01/24	GRB-112
R512142-04	93	BLK (QC ID=55712)	<u>3.3</u>	0.100			64	100					01/24/06	01/24	GRB-114
R512142-05	93	Duplicate (R512142-01) (QC ID=55713)	<u>8.3</u>	0.110			189	100				34	01/24/06	01/24	GRB-110

Nominal values and limits from method 3.0 0.100 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 6.6 ± 5.0
 FOR 5 SAMPLES RESIDUE 150 ± 164

METHOD SUMMARIES

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 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

LAB METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test 93B Matrix WATER

SDG 7358

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Contract SDG K0150

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta

Preparation batch 7131-011

R512142-01	93	7358-001	J10V58	471
R512142-02	93	7358-002	J10V59	530
R512142-03	93	7358-003	LCS (QC ID=55711)	ok
R512142-04	93	7358-004	BLK (QC ID=55712)	U
R512142-05	93	7358-005	Duplicate (R512142-01)	ok

Nominal values and limits from method RDLs (pCi/L) 4.0
ERDF Semiannual Leachate Analysis

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 7131-011 2σ prep error 15.0 % Reference Lab Notebook 7131 pg. 11

R512142-01	93	J10V58	<u>6.2</u>	0.110			190		100			34	01/24/06	01/24	GRB-105
R512142-02	93	J10V59	<u>4.7</u>	0.135			244		100			34	01/24/06	01/24	GRB-109
R512142-03	93	LCS (QC ID=55711)	<u>5.6</u>	0.100			63		100				01/24/06	01/24	GRB-112
R512142-04	93	BLK (QC ID=55712)	<u>8.0</u>	0.100			64		100				01/24/06	01/24	GRB-114
R512142-05	93	Duplicate (R512142-01)	<u>6.5</u>	0.110			189		100			34	01/24/06	01/24	GRB-110
		(QC ID=55713)													

Nominal values and limits from method 4.0 0.100 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 6.2 ± 2.4
FOR 5 SAMPLES RESIDUE 150 ± 164

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Protocol Hanford

Version Ver 1.0

Form DVD-LMS

Version 3.06

Report date 02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

Test I Matrix WATER
 SDG 7358
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN WATER
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG K0150

RESULTS

LAB RAW SUP-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Iodine 129

Preparation batch 7131-011

R512142-01		7358-001	J10V58	U
R512142-02		7358-002	J10V59	U
R512142-03		7358-003	LCS (QC ID=55711)	ok
R512142-04		7358-004	BLK (QC ID=55712)	U
R512142-05		7358-005	Duplicate (R512142-01)	- U

Nominal values and limits from method RDLs (pCi/L) 5.0
 ERDF Semiannual Leachate Analysis

METHOD PERFORMANCE

LAB RAW SUP- 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 YZED DETECTOR

Preparation batch 7131-011 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 11

R512142-01		J10V58	<u>8.5</u>	0.250				74		1336		42	01/31/06	02/01	XSPEC-016
R512142-02		J10V59	<u>7.2</u>	0.250				46		654		47	01/31/06	02/06	XSPEC-002
R512142-03		LCS (QC ID=55711)	<u>39</u>	0.250				26		872			01/31/06	02/02	XSPEC-016
R512142-04		BLK (QC ID=55712)	<u>20</u>	0.250				39		653			01/31/06	02/06	XSPEC-016
R512142-05		Duplicate (R512142-01) (QC ID=55713)	<u>15</u>	0.250				46		895		44	01/31/06	02/03	XSPEC-016

Nominal values and limits from method 5.0 0.250 20-105 300 100 180

PROCEDURES REFERENCE I129_SEP_LEPS_GS
 CP-024 Iodine-129, Sample Dissolution, rev 5
 CP-530 Iodine-129 Purification, rev 1

AVERAGES ± 2 SD MDA 18 ± 26
 FOR 5 SAMPLES YIELD 46 ± 35

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 Protocol Hanford
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 Form DVD-LMS
 Version 3.06
 Report date 02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0150

LAB METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY (KPA)

Test U T Matrix WATER
SDG 7358
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG K0150

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Uranium
Preparation batch 7131-011				
R512142-01		7358-001	J10V58	754
R512142-02		7358-002	J10V59	941
R512142-03		7358-003	LCS (QC ID=55711)	ok
R512142-04		7358-004	BLK (QC ID=55712)	U
R512142-05		7358-005	Duplicate (R512142-01)	ok

Nominal values and limits from method RDLs (ug/L) 0.10
ERDF Semiannual Leachate Analysis

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	ug/L	L	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7131-011 2σ prep error 9.0 % Reference Lab Notebook 7131 pg. 11													
R512142-01		J10V58	<u>4.1</u>				0.0200					33 01/23/06	01/23 KPA-001
R512142-02		J10V59	<u>4.1</u>				0.0200					33 01/23/06	01/23 KPA-001
R512142-03		LCS (QC ID=55711)	<u>0.41</u>				0.0200					01/23/06	01/23 KPA-001
R512142-04		BLK (QC ID=55712)	<u>0.041</u>				0.0200					01/23/06	01/23 KPA-001
R512142-05		Duplicate (R512142-01)	<u>4.1</u>				0.0200					33 01/23/06	01/23 KPA-001
		(QC ID=55713)											

Nominal values and limits from method 0.10 0.0200 180

PROCEDURES REFERENCE UTOT_KPA
CP-044 Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 6
CP-929 Calibration of the Kinetic Phosphorimeter, rev 9

AVERAGES ± 2 SD MDA 2.6 ± 4.3
FOR 5 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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SAMPLE DELIVERY GROUP K0150

LAB METHOD SUMMARY

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Test C Matrix WATER
 SDG 7358
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG K0150

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7131-011				
R512142-01		7358-001	J10V58	U
R512142-02		7358-002	J10V59	U
R512142-03		7358-003	LCS (QC ID=55711)	ok
R512142-04		7358-004	BLK (QC ID=55712)	U
R512142-05		7358-005	Duplicate (R512142-01)	- U
R512142-06		7358-006	Spike (R512142-02)	ok

Nominal values and limits from method RDLs (pCi/L) 200
 ERDF Semiannual Leachate Analysis

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	YZED	DETECTOR
Preparation batch 7131-011 2σ prep error 10.0 % Reference Lab Notebook 7131 pg. 11															
R512142-01		J10V58	79	0.0150			100		75			32	01/18/06	01/22	LSC-005
R512142-02		J10V59	76	0.0150			100		75			32	01/18/06	01/22	LSC-005
R512142-03		LCS (QC ID=55711)	75	0.0150			100		75				01/18/06	01/22	LSC-005
R512142-04		BLK (QC ID=55712)	77	0.0150			100		75				01/18/06	01/22	LSC-005
R512142-05		Duplicate (R512142-01)	75	0.0150			100		75			33	01/18/06	01/23	LSC-005
		(QC ID=55713)													
R512142-06		Spike (R512142-02)	83	0.0150			100		63			33	01/18/06	01/23	LSC-005
		(QC ID=55714)													

Nominal values and limits from method 200 0.0150 50 180

PROCEDURES REFERENCE C14_CHEM_LSC
 CP-241 Carbon-14 in Aqueous Samples, rev 6

AVERAGES ± 2 SD MDA 78 ± 6.2
 FOR 6 SAMPLES YIELD 100 ± 0

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SAMPLE DELIVERY GROUP K0150

SDG 7358
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG K0150

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

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

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

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SAMPLE DELIVERY GROUP K0150

SDG 7358
 Contact Melissa C. Mannion

R E P O R T G U I D E

Client Hanford
 Contract No. 630
 Case no SDG K0150

P R E P A R A T I O N B A T C H S U M M A R Y

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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Contact Melissa C. Mannion

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WORK SUMMARY

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

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

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

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

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DATA SHEET

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

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

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SDG 7358
 Contact Melissa C. Mannion

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 Case no SDG K0150

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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 Form DVD-RG
 Version 3.06
 Report date 02/13/06

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0150

SDG 7358
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG K0150

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.

REPORT GUIDES

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

SAMPLE DELIVERY GROUP K0150

SDG 7358
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG K0150

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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Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG K0150

MATRIX SPIKE

for the recovery.

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

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

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REPORT GUIDE

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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METHOD SUMMARY

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

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

SAMPLE DELIVERY GROUP K0150

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GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG K0150

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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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
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Version 3.06
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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-010-1		Page 1 of 1			
Collector GALE, S.J. / RZ Steffler		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 7N		Data Turnaround 45 Days		
Project Designation ERDF Semiannual Leachate Analysis		Sampling Location ERDF K0150 (7358)			SAF No. RC-010		Air Quality					
Ice Chest No. ERC-99-046		Field Logbook No. EL-1518-2		COA RERDF22560		Method of Shipment FED EX						
Shipped To EBERLINE SERVICES LIONVILLE		Offsite Property No. A 060181			Bill of Lading/Air Bill No. SEE OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIALLY RADIOACTIVE <DOT REGULATED AND CORROSIVE Special Handling and/or Storage None 12/21/05		Preservation	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2	None		
		Type of Container	aGs*	G/P	G/P	P	P	G/P	G/P	G/P		
		No. of Container(s)	3	1	1	1	1	2	1	4		
		Volume	40mL	500mL	500mL	500mL	500mL	1000mL	250mL	1000mL		
SAMPLE ANALYSIS			VOA - 8260A (TCL) (Carbon tetrachloride)	See item (1) in Special Instructions.	TDS - 160.1	Conductivity - 9050	See item (2) in Special Instructions.	Gross Alpha, Gross Beta, Total Uranium, Total Radium	Technetium-99	Carbon-14 Medium Level, Iodine-129		
		Sample No.	Matrix *	Sample Date	Sample Time							
J10V58	WATER	12-21-05	10491048					X	X	X		
J10V59	WATER	12-21-05	10491039					X	X	X		
J10V60	WATER											
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From RZ Steffler		Date/Time 12/21/05		Received By/Stored In Fed Ex		Date/Time 12-21-05		(1) ICP Metals - 6010A (TAL) {Barium, Chromium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Tin} (2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate}				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From FED EX		Date/Time		Received By/Stored In Mey		Date/Time 12/23/05 11:00						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
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					



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City MCHLAND State WA
 Date/Time received 12/23/05 11:00 CoC No. RC-010-1
 Container I.D. No. ERC 99-646 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
5. Packing material is: Wet [] Dry []
6. Number of samples in shipping container: 2 Sample Matrix W
7. Number of containers per sample: 7 (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 1/7 Preservative HNO₃, HCL
13. Describe any anomalies:

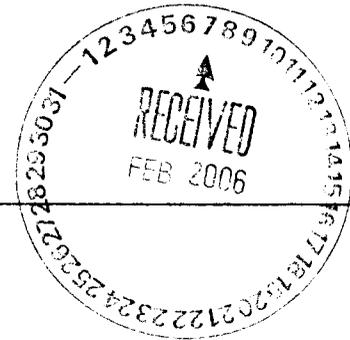
14. Was P.M. notified of any anomalies? Yes [] No [] Date _____
15. Inspected by MFU Date: 12/27/05 Time: 9:30

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

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. _____ Calibration date _____



3 February 2006



Joan Kessner
WC-Hanford
3190 Washington Way
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 #	0512L982
SDG #	K0150
SAF #	RC-010
Date Received	12-23-05
# Samples	2
Matrix	WATER
Volatiles	X
Semivolatiles	
Pest/PCB	
PAH	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

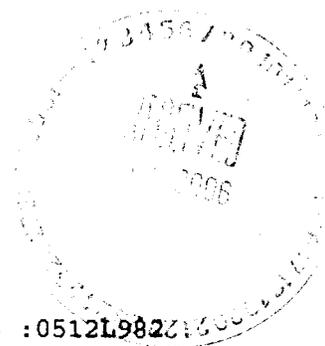
The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

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

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-010 K0150



DATE RECEIVED: 12/23/05

LVL LOT # :0512L982216

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J10V58	001	W	05LVG370	12/21/05	N/A	12/29/05
J10V58	001 MS	W	05LVG370	12/21/05	N/A	12/29/05
J10V58	001 MSD	W	05LVG370	12/21/05	N/A	12/29/05
J10V59	002	W	05LVG370	12/21/05	N/A	12/29/05
J10V60	003	W	05LVG370	12/12/05	N/A	12/29/05

LAB QC:

VBLKOM	MB1	W	05LVG370	N/A	N/A	12/29/05
VBLKOM	MB1 BS	W	05LVG370	N/A	N/A	12/29/05



Case Narrative

Client: TNU-HANFORD RC-010
LVL #: 0512L982
SDG/SAF # K0150/RC-010

W.O. #: 11343-606-001-9999-00
Date Received: 12-23-2005

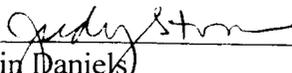
GC/MS VOLATILE

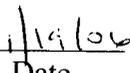
Three (3) water samples were collected on 12-12,21-2005.

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 compound Carbon Tetrachloride on 12-29-2005.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were analyzed within required holding time with the exception of sample J10V60, which was received outside the holding time.
3. All surrogate recoveries were within acceptance criteria.
4. The matrix spike recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. Internal standard area and retention time criteria were met.
7. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
8. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. 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


Date

som\group\data\voa\tnu-hanford\0512-982.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 9 pages.

GLOSSARY

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- 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.

sb10-03\gloss.doc



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GLOSSARY

ABBREVIATIONS

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

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

- MP** - **Missed Peak:** Manually added peak not found by automatic quan program.
- PA** - **Peak Assignment:** Quan report was changed to reflect correct peak assignment.
- RI** - **Routine Integration:** Routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the Dichlorobenzene isomers on the VOA packed column and Benzo (b) fluoranthene /Benzo (k) fluoranthene which are poorly 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.

LVL-21-21-035/A-08/93



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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-010-1		Page 1 of 1								
Collector GALE, SJ / RZ Steffler		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 7N		Data Turnaround							
Project Designation ERDF Semiannual Leachate Analysis		Sampling Location ERDF		SAF No. RC-010		Air Quality <input type="checkbox"/>		45 Days									
Ice Chest No. SML-363		Field Logbook No. EL-1518-2		COA RERDF22560		Method of Shipment FED EX											
Shipped To EBERLINE SERVICES (LIONVILLE)		Offsite Property No. A060181139		Bill of Lading/Air Bill No. SEE OSPC													
POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIALLY RADIOACTIVE <DOT REGULATED AND CORROSIVE Special Handling and/or Storage COOL 4C				Preservation		HCl or H2SO4 to pH <2	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2	None				
				Type of Container		uGs*	G/P	G/P	P	P	P	G/P	G/P	G/P			
				No. of Container(s)		3	1	1	1	1	2	1	4				
				Volume		40mL	500mL	500mL	500mL	500mL	1000mL	250mL	1000mL				
SAMPLE ANALYSIS				VOA - E260A (TCL) (Carbon tetrachloride)	See item (1) in Special Instructions.	TDS - 160.1	Conductivity - 9050	See item (2) in Special Instructions.	Gross Alpha; Gross Beta; Total Uranium; Total Radium	Technetium-99	Carbon-14 Medium Level; Iodine-129						
Sample No.	Matrix *	Sample Date	Sample Time														
J10V58	WATER	12-21-05	1044	X	X	X	X	X									
J10V59	WATER	12-21-05	1038	X	X	X	X	X				X	RES 12-21-05				
J10V60	WATER	12-12-05	0655	X													
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *					
Relinquished By/Removed From RZ Steffler RZ Steffler		Date/Time 12-21-05 1245		Received By/Stored In Fed Ex		Date/Time		(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Beryllium, Lead, Selenium, Tin) (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)				S=Soil SE=Sediment SD=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trash WI=Wipe L=Liquid V=Vegetation X=Other					
Relinquished By/Removed From Fed Ex		Date/Time 12-23-05/1100		Received By/Stored In J. Smith		Date/Time 12-23-05/1100											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
LABORATORY SECTION		Received By		Title				Date/Time									
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time									

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

CLIENT: TNU Hanford

Date: 12-23-05

Purchase Order / Project# /
SAF# / SOW# / Release #: RC-010

LvLI Batch #: 0512L982

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|--|--|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <u>FEDEX</u> | Airbill# 7913 1576 5148 |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received <u>cooled</u> or ambient? | Temp <u>0.3 °C</u> | Cooler # <u>Sml-363</u> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No | <u>12-23-05</u>
<u>1C Anions out of house.</u> |
| 13. VOA, TOC, TOX free of headspace? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-010 K0150



DATE RECEIVED: 12/23/05

LVL LOT # :0512L982

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

J10V58

ARSENIC, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
ARSENIC, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
BARIUM, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
BARIUM, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
BERYLLIUM, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
BERYLLIUM, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
CHROMIUM, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
CHROMIUM, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
LEAD, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
LEAD, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
SELENIUM, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
SELENIUM, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
TIN, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
TIN, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
VANADIUM, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
VANADIUM, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06
ZINC, TOTAL	001	W	06L0032	12/21/05	01/18/06	01/18/06
ZINC, TOTAL	001 REP	W	06L0032	12/21/05	01/18/06	01/18/06

J10V59

ARSENIC, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
ARSENIC, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
BARIUM, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
BARIUM, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
BERYLLIUM, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
BERYLLIUM, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
CHROMIUM, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
CHROMIUM, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
LEAD, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
LEAD, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
SELENIUM, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
SELENIUM, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
TIN, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
TIN, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-010 K0150

DATE RECEIVED: 12/23/05

LVL LOT # :0512L982

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
VANADIUM, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06
ZINC, TOTAL	002	W	06L0032	12/21/05	01/18/06	01/18/06
ZINC, TOTAL	002 MS	W	06L0032	12/21/05	01/18/06	01/18/06

LAB QC:

ARSENIC LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
ARSENIC, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
BARIUM LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
BARIUM, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
BERYLLIUM LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
BERYLLIUM, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
CHROMIUM LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
CHROMIUM, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
LEAD LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
LEAD, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
SELENIUM LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
SELENIUM, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
TIN LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
TIN, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
VANADIUM LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
VANADIUM, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06
ZINC LABORATORY	LC1 BS	W	06L0032	N/A	01/18/06	01/18/06
ZINC, TOTAL	MB1	W	06L0032	N/A	01/18/06	01/18/06



Analytical Report

Client: TNU-HANFORD RC-010
LVL#: 0512L982
SDG/SAF#: K0150/RC-010

W.O.#: 11343-606-001-9999-00
Date Received: 12-23-05

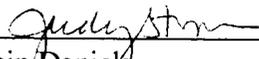
METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 water samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 2 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 Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a

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

region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. 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

2/3/04
Date

jjw:m12-982



METALS METHOD GLOSSARY

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

Lot#:

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	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Antimony	<u> 6010B </u> <u> 7041⁵ </u>	<u> 200.7 </u>	<u> 204.2 </u>		<u> 99 </u>
Arsenic	<u> 6010B </u> <u> 7060A⁵ </u>	<u> 200.7 </u>	<u> 206.2 </u>	<u> 3113B </u>	<u> 99 </u>
Barium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Beryllium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Bismuth	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Boron	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Cadmium	<u> 6010B </u> <u> 7131A⁵ </u>	<u> 200.7 </u>	<u> 213.2 </u>		<u> 99 </u>
Calcium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Chromium	<u> 6010B </u> <u> 7191⁵ </u>	<u> 200.7 </u>	<u> 218.2 </u>		<u> SS17 </u>
Cobalt	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Copper	<u> 6010B </u> <u> 7211⁵ </u>	<u> 200.7 </u>	<u> 220.2 </u>		<u> 99 </u>
Iron	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Lead	<u> 6010B </u> <u> 7421⁵ </u>	<u> 200.7 </u>	<u> 239.2 </u>	<u> 3113B </u>	<u> 99 </u>
Lithium	<u> 6010B </u> <u> 7430⁴ </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Magnesium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Manganese	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Mercury	<u> 7470A³ </u> <u> 7471A³ </u>	<u> 245.1² </u>	<u> 245.5² </u>		<u> 99 </u>
Molybdenum	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Nickel	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Potassium	<u> 6010B </u> <u> 7610⁴ </u>	<u> 200.7 </u>	<u> 258.1⁴ </u>		<u> 99 </u>
Rare Earths	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Selenium	<u> 6010B </u> <u> 7740⁵ </u>	<u> 200.7 </u>	<u> 270.2 </u>	<u> 3113B </u>	<u> 99 </u>
Silicon	<u> 6010B¹ </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Silica	<u> 6010B </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Silver	<u> 6010B </u> <u> 7761⁵ </u>	<u> 200.7 </u>	<u> 272.2 </u>		<u> 99 </u>
Sodium	<u> 6010B </u> <u> 7770⁴ </u>	<u> 200.7 </u>	<u> 273.1⁴ </u>		<u> 99 </u>
Strontium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Thallium	<u> 6010B </u> <u> 7841⁵ </u>	<u> 200.7 </u>	<u> 279.2 </u>	<u> 200.9 </u>	<u> 99 </u>
Tin	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Titanium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Uranium	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Vanadium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Zinc	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Zirconium	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

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

L-W1-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/25/06

CLIENT: TNUHANFORD RC-010 K0150

LVL LOT #: 0512L982

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J10V58	Arsenic, Total	8.3	UG/L	3.4	1.0
		Barium, Total	108	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Chromium, Total	36.1	UG/L	1.6	1.0
		Lead, Total	3.1 u	UG/L	3.1	1.0
		Selenium, Total	4.7	UG/L	3.6	1.0
		Tin, Total	5.2 u	UG/L	5.2	1.0
		Vanadium, Total	18.1	UG/L	0.90	1.0
		Zinc, Total	11.7	UG/L	0.50	1.0
-002	J10V59	Arsenic, Total	7.2	UG/L	3.4	1.0
		Barium, Total	108	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Chromium, Total	37.8	UG/L	1.6	1.0
		Lead, Total	3.1 u	UG/L	3.1	1.0
		Selenium, Total	3.9	UG/L	3.6	1.0
		Tin, Total	5.2 u	UG/L	5.2	1.0
		Vanadium, Total	18.7	UG/L	0.90	1.0
		Zinc, Total	16.6	UG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/25/06

CLIENT: TNUHANFORD RC-010 K0150
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	06L0032-MB1	Arsenic, Total	3.4	u UG/L	3.4	1.0
		Barium, Total	0.20	u UG/L	0.20	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Chromium, Total	1.6	u UG/L	1.6	1.0
		Lead, Total	3.1	u UG/L	3.1	1.0
		Selenium, Total	3.6	u UG/L	3.6	1.0
		Tin, Total	5.2	u UG/L	5.2	1.0
		Vanadium, Total	0.90	u UG/L	0.90	1.0
		Zinc, Total	0.50	u UG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/25/06

CLIENT: TNUHANFORD RC-010 K0150
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	J10V59	Arsenic, Total	1950	7.2	2000	97.4	1.0
		Barium, Total	2030	108	2000	96.3	1.0
		Beryllium, Total	48.3	0.10u	50.0	96.6	1.0
		Chromium, Total	230	37.8	200	96.2	1.0
		Lead, Total	473	3.1 u	500	94.6	1.0
		Selenium, Total	1940	3.9	2000	96.7	1.0
		Tin, Total	969	5.2 u	1000	96.9	1.0
		Vanadium, Total	503	18.7	500	96.9	1.0
		Zinc, Total	489	16.6	500	94.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/25/06

CLIENT: TNUHANFORD RC-010 K0150

LVL LOT #: 0512L982

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
-001REP	J10V58	Arsenic, Total	8.3	9.8	16.6	1.0
		Barium, Total	108	105	3.1	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Chromium, Total	36.1	34.5	4.5	1.0
		Lead, Total	3.1 u	3.1 u	NC	1.0
		Selenium, Total	4.7	3.6 u	NC 200	1.0
		Tin, Total	5.2 u	5.2 u	NC	1.0
		Vanadium, Total	18.1	17.9	1.1	1.0
		Zinc, Total	11.7	31.1	90.7	1.0

Handwritten notes:
~~NC~~ 200
 JW
 2/2/06

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/25/06

CLIENT: TNUHANFORD RC-010 K0150

LVL LOT #: 0512L982

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	06L0032-LC1	Arsenic, LCS	9610	10000	UG/L	96.1
		Barium, LCS	4890	5000	UG/L	97.7
		Beryllium, LCS	247	250	UG/L	98.7
		Chromium, LCS	500	500	UG/L	100.1
		Lead, LCS	2470	2500	UG/L	98.7
		Selenium, LCS	9670	10000	UG/L	96.7
		Tin, LCS	4900	5000	UG/L	98.0
		Vanadium, LCS	2470	2500	UG/L	99.0
		Zinc, LCS	989	1000	UG/L	98.9

Collector: GALE, SJ / RZ Steffler
 Company Contact: JOAN KESSNER Telephone No. 375-4688
 Project Coordinator: KESSNER, JH Price Code 7N Data Turnaround 45 Days
 Project Designation: ERDF Semiannual Leachate Analysis
 Sampling Location: ERDF SAF No. RC-010 Air Quality

Ice Chest No. SML-363
 Field Logbook No. EL-1518-2 COA RERDF22560
 Method of Shipment: FED EX

Shipped To: EBERLINE SERVICES (LIONVILLE)
 Offsite Property No. A060481139
 Bill of Lading/Air Bill No. SEE OSCP

POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIALLY RADIOACTIVE <DOT REGULATED AND CORROSIVE Special Handling and/or Storage COOL 4C	Preservation	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2	None
	Type of Container	aGs*	G/P	G/P	P	P	G/P	G/P	G/P
	No. of Container(s)	3	1	1	1	1	2	1	4
	Volume	40mL	500mL	500mL	500mL	500mL	1000mL	250mL	1000mL

SAMPLE ANALYSIS	VOA - 8260A (TCL) (Carbon tetrachloride)	See item (1) in Special Instructions.	TDS - 160.1	Conductivity - 9050	See item (2) in Special Instructions.	Gross Alpha; Gross Beta; Total Uranium; Total Radium	Technetium-99	Carbon-14 Medium Level; Iodine-129

Sample No.	Matrix *	Sample Date	Sample Time							
J10V58	WATER	12-21-05	1044	X	X	X	X	X		
J10V59	WATER	12-21-05	1038	X	X	X	X	X	X	RES 12-21-05
J10V60	WATER	12-12-05	0655	X						

CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS					Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Beryllium, Lead, Selenium, Tin) (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)					S=Soil SE=Solids SO=Solid SL=Sediment W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time								

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

000000013

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford

Date: 12-23-05

Purchase Order / Project# /
 SAF# / SOW# / Release #: RC-010

LvLI Batch #: 05121982

Sample Custodian: *D. Smith*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or Shipped | Carrier <i>FEDEX</i> | Airbill# 79131576 5148 |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received <u>cooled or ambient</u> ? | Temp <i>0.3 °C</i> | Cooler # <i>Sml-363</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <i>JL</i> <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<i>12-23-05</i> | <i>1C Anions out of hold.</i> |
| 13. VOA, TOC, TOX free of headspace? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |

SR-002-B





Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-010 K0150

DATE RECEIVED: 12/23/05

LVL LOT # :0512L982

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
J10V58							
BROMIDE BY IC	001	W	05LIC106	12/21/05	12/28/05	12/28/05	
BROMIDE BY IC	001 REP	W	05LIC106	12/21/05	12/28/05	12/28/05	
BROMIDE BY IC	001 MS	W	05LIC106	12/21/05	12/28/05	12/28/05	
CHLORIDE BY IC	001	W	05LIC106	12/21/05	12/28/05	12/29/05	
CHLORIDE BY IC	001 REP	W	05LIC106	12/21/05	12/28/05	12/29/05	
CHLORIDE BY IC	001 MS	W	05LIC106	12/21/05	12/28/05	12/29/05	
FLUORIDE BY IC	001	W	05LIC106	12/21/05	12/28/05	12/28/05	
FLUORIDE BY IC	001 REP	W	05LIC106	12/21/05	12/28/05	12/28/05	
FLUORIDE BY IC	001 MS	W	05LIC106	12/21/05	12/28/05	12/28/05	
NITRITE BY IC	001	W	05LIC106	12/21/05	12/28/05	12/29/05	1459
NITRITE BY IC	001 REP	W	05LIC106	12/21/05	12/28/05	12/29/05	1514
NITRITE BY IC	001 MS	W	05LIC106	12/21/05	12/28/05	12/29/05	1528
NITRATE BY IC	001	W	05LIC106	12/21/05	12/28/05	12/29/05	1416
NITRATE BY IC	001 REP	W	05LIC106	12/21/05	12/28/05	12/29/05	1431
NITRATE BY IC	001 MS	W	05LIC106	12/21/05	12/28/05	12/29/05	1445
SULFATE BY IC	001	W	05LIC106	12/21/05	12/28/05	12/29/05	
SULFATE BY IC	001 REP	W	05LIC106	12/21/05	12/28/05	12/29/05	
SULFATE BY IC	001 MS	W	05LIC106	12/21/05	12/28/05	12/29/05	
SPECIFIC CONDUCTANCE	001	W	05LSP025	12/21/05	12/29/05	12/29/05	
SPECIFIC CONDUCTANCE	001 REP	W	05LSP025	12/21/05	12/29/05	12/29/05	
TOTAL DISSOLVED SOLI	001	W	05LSSB37	12/21/05	12/27/05	12/27/05	

J10V59

BROMIDE BY IC	002	W	05LIC106	12/21/05	12/28/05	12/28/05	
CHLORIDE BY IC	002	W	05LIC106	12/21/05	12/28/05	12/29/05	
FLUORIDE BY IC	002	W	05LIC106	12/21/05	12/28/05	12/28/05	
NITRITE BY IC	002	W	05LIC106	12/21/05	12/28/05	12/29/05	1612
NITRATE BY IC	002	W	05LIC106	12/21/05	12/28/05	12/29/05	1543
SULFATE BY IC	002	W	05LIC106	12/21/05	12/28/05	12/29/05	
SPECIFIC CONDUCTANCE	002	W	05LSP025	12/21/05	12/29/05	12/29/05	
TOTAL DISSOLVED SOLI	002	W	05LSSB37	12/21/05	12/27/05	12/27/05	

LAB QC:

BROMIDE BY IC	MB1	W	05LIC106	N/A	12/28/05	12/28/05	
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Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-010 K0150

DATE RECEIVED: 12/23/05

LVL LOT # :0512L982

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BROMIDE BY IC	MB1 BS	W	05LIC106	N/A	12/28/05	12/28/05
CHLORIDE BY IC	MB1	W	05LIC106	N/A	12/28/05	12/28/05
CHLORIDE BY IC	MB1 BS	W	05LIC106	N/A	12/28/05	12/28/05
FLUORIDE BY IC	MB1	W	05LIC106	N/A	12/28/05	12/28/05
FLUORIDE BY IC	MB1 BS	W	05LIC106	N/A	12/28/05	12/28/05
NITRITE BY IC	MB1	W	05LIC106	N/A	12/28/05	12/28/05
NITRITE BY IC	MB1 BS	W	05LIC106	N/A	12/28/05	12/28/05
NITRATE BY IC	MB1	W	05LIC106	N/A	12/28/05	12/28/05
NITRATE BY IC	MB1 BS	W	05LIC106	N/A	12/28/05	12/28/05
SULFATE BY IC	MB1	W	05LIC106	N/A	12/28/05	12/28/05
SULFATE BY IC	MB1 BS	W	05LIC106	N/A	12/28/05	12/28/05
SPECIFIC CONDUCTANCE	MB1	W	05LSP025	N/A	12/29/05	12/29/05
SPECIFIC CONDUCTANCE	MB1 BS	W	05LSP025	N/A	12/29/05	12/29/05
TOTAL DISSOLVED SOLI	MB1	W	05LSSB37	N/A	12/27/05	12/27/05
TOTAL DISSOLVED SOLI	MB1 BS	W	05LSSB37	N/A	12/27/05	12/27/05
TOTAL DISSOLVED SOLI	MB1 BSD	W	05LSSB37	N/A	12/27/05	12/27/05



Analytical Report

Client: TNU-HANFORD RC-010 K0150
LVL#: 0512L982

W.O.#: 11343-606-001-9999-00
Date Received: 12-23-05

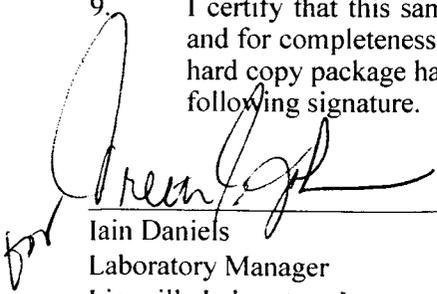
INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 water samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

Elevated reporting limits for Nitrite are the result of the necessity to dilute the samples to diminish co-elution effects.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrite and Nitrate (see the sample chronology summary for analyses times for short hold samples)
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of Nitrite and Nitrate as noted on the Sample Receipt Checklist.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Total Dissolved Solids (TDS) was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Bromide, Chloride, Fluoride, Nitrite, Nitrate and Sulfate were within the 75-125% control limits.
8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Sulfate and Specific Conductance were within the 20% Relative Percent Difference (RPD) control limit. Replicate analysis for TDS was not performed due to an analyst's oversight.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

njp\12-982

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 13 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	305.1		
___ Alkalinity ___ Bicarbonate ___ Carbonate	310.1		
BOD	405.1		5210B (b)
Ion Chromatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	300.0	9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	300.0	9056	
✓ Sulfate ___ Formate ^{NA} ²⁻¹²⁶ Acetate ___ Oxalate	300.0	9056	
Chloride	325.2	9251	
Chlorine, Residual	330.5 (mod)		
Cyanide, Amenable to Chlorination	335.2	9010B	
Cyanide, Total	335.2	9010B	9014 ILMO4.0 (e)
Cyanide, Weak Acid Dissociable			412 (a) 4500CN-1 (b)
COD	410.4(mod)		5220C (b)
Color	110.2		
Corrosivity by Coupon		1110(mod)	
Chromium VI		7196A	3500Cr-D (b)
Fluoride	340.2		4500-FC
Hardness, Calcium	215.2		
Hardness, Total	130.2		
Iodide			ASTM D19P202 (1)
Surfactant	425.1		
___ Nitrate-Nitrite ___ Nitrate ___ Nitrite	353.2		
Ammonia	350.3		
Total ___ Kjeldahl ___ Organic Nitrogen	351.3		
Total ___ Organic ___ Inorganic Carbon	415.1	9060	
Oil & Grease	413.1	9070	
___ pH ___ pH; paper	150.1	9040B	9041A
Petroleum Hydrocarbons, Total Recoverable	418.1		
Phenol	420.1	420.2	9065 9066
___ Ortho ___ Total Phosphate	365.2		4500-P B C
Salinity			210A (a) 2520 (b)
Settleable Solids	160.5		
Sulfide	376.1		9030B/9034 (acid soluble)
Reactive ___ Cyanide ___ Sulfide		Section 7.3	(9014 9030B)
Silica	370.1		
Sulfite	377.1		
Sulfate	375.4	9038	
Specific Conductance	120.1	9050A	
Specific Gravity			D5057-90 213E (a)
Synthetic Precipitation Leach		1312	
Total ✓ Dissolved ___ Suspended ___ Solids	160 ✓.1 ___ .2 ___ .3		
Total Organic Halides	450.1	9020B	
Turbidity	180.1		
Volatile Solids:			
___ Total ___ Dissolved ___ Suspended	160.4		
Other:		Method:	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/02/06

CLIENT: TNUHANFORD RC-010 K0150
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	J10V58	Bromide by IC	0.78	MG/L	0.25	1.0
		Chloride by IC	221	MG/L	12.5	50.0
		Fluoride by IC	0.27	MG/L	0.25	1.0
		Nitrite by IC	5.00 u	MG/L	5.00	20.0
		Nitrate by IC	324	MG/L	12.5	50.0
		Sulfate by IC	404	MG/L	25.0	100
		Specific Conductance	2750	US/CM	1.0	1.0
		Total Dissolved Solids	1860	MG/L	5.00	1.0
-002	J10V59	Bromide by IC	0.80	MG/L	0.25	1.0
		Chloride by IC	211	MG/L	25.0	100
		Fluoride by IC	0.28	MG/L	0.25	1.0
		Nitrite by IC	5.00 u	MG/L	5.00	20.0
		Nitrate by IC	316	MG/L	25.0	100
		Sulfate by IC	431	MG/L	25.0	100
		Specific Conductance	2770	US/CM	1.0	1.0
		Total Dissolved Solids	1920	MG/L	5.00	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/02/06

CLIENT: TNUHANFORD RC-010 K0150
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK10	05LIC106-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	05LSP025-MB1	Specific Conductance	1.0 u	US/CM	1.0	1.0
BLANK10	05LSSB37-MB1	Total Dissolved Solids	5.00 u	MG/L	5.00	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/02/06

CLIENT: TNUHANFORD RC-010 K0150
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J10V58	Bromide by IC	10.1	0.78	10.0	93.1	2.0
		Chloride by IC	724	221	500	100.7	100
		Fluoride by IC	9.6	0.27	10.0	93.0	2.0
		Nitrite by IC	240	5.00u	250	96.2	50.0
		Nitrate by IC	794	324	500	94.0	100
		Sulfate by IC	1390	404	1000	98.1	200
BLANK10	05LIC106-MB1	Bromide by IC	5.0	0.25u	5.0	101.0	1.0
		Chloride by IC	4.8	0.25u	5.0	95.3	1.0
		Fluoride by IC	4.9	0.25u	5.0	97.9	1.0
		Nitrite by IC	5.14	0.25u	5.00	102.8	1.0
		Nitrate by IC	5.14	0.25u	5.00	102.9	1.0
		Phosphate by IC	5.2	0.25u	5.0	103.6	1.0
		Sulfate by IC	4.9	0.25u	5.0	98.0	1.0
BLANK10	05LSP025-MB1	Specific Conductance	720	1.0 u	718	100.3	1.0
BLANK10	05LSSB37-MB1	Total Dissolved Solids	103	5.00u	100	103.0	1.0
		Total Dissolved Solids	101	5.00u	100	101.0	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 02/02/06

CLIENT: TNUHANFORD RC-010 K0150
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	05LSSB37-MB1	Total Dissolved Solids	103.0	101.0	2.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/02/06

CLIENT: TNUHANFORD RC-010 K0150
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0512L982

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE RPD		DILUTION
			RESULT			FACTOR (REP)
-001REP	J10V58	Bromide by IC	0.78	0.90	13.7	1.0
		Chloride by IC	221	222	0.30	50.0
		Fluoride by IC	0.27	0.28	3.9	1.0
		Nitrite by IC	5.00u	5.00u	NC	20.0
		Nitrate by IC	324	290	11.0	50.0
		Sulfate by IC	404	410	1.4	100
		Specific Conductance	2750	2730	0.66	1.0

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

See SRC

0512L982

Client TNU Hanford RC-010
 Est. Final Proj. Sampling Date _____
 Project # 11343-606-001-9999-00
 Project Contact/Phone # _____
 Lionville Laboratory Project Manager Orlotta Johnson
 QC Spec Del Std TAT 30 Days
 Date Rec'd 12-23-05 Date Due 1/22/06

Refrigerator #	A-C				D	E	F	G
#/Type Container	Liquid	Solid						
Volume	Liquid	Solid						
Preservatives	HCL/H2SO4				HNO3			
ANALYSES REQUESTED →	ORGANIC				INORG			
	VOA	BNA	Pest/PCB	Herb	Metal	CN	TDS	Conduc (2)

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																
			MS	MSD				METALS	ITDS	ISPCD	ICO													
S - Soil																								
SE - Sediment																								
SO - Solid																								
SL - Sludge																								
W - Water																								
O - Oil																								
A - Air																								
DS - Drum Solids	0001	J10V58			W	12-21-05	1040	X																
DL - Drum Liquids	0002	J10V59			L		1038	X																
L - EP/TCLP Leachate	0003	J10V60			L	12-2-05	0655	X																
WI - Wipe																								
X - Other																								
F - Fish																								

Special Instructions:
 METALS ⊙ = Ba, Cr, V, Zn, As, Be, Pb, Se, Sn
 ICO ⊙ = IC-Br, Cl, Fl, NO3, NO2, SO4
 RUN MATRIX QC

DATE/REVISIONS:

- _____
- _____
- _____
- _____
- _____
- _____

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	12-23-05	1100					COMPOSITE WASTE	ORIGINAL REWRITTEN		

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-010-1		Page 1 of 1					
Collector GALE, SJ / RZ Steffler		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 7N		Data Turnaround 45 Days				
Project Designation ERDF Semiannual Leachate Analysis		Sampling Location ERDF		SAF No. RC-010		Air Quality <input type="checkbox"/>								
Ice Chest No. SML-363		Field Logbook No. EL-1518-2		COA RERDF22560		Method of Shipment FED EX								
Shipped To EBERLINE SERVICES (LIONVILLE)		Offsite Property No. A060181139		Bill of Lading/Air Bill No. SEE OSPC										
POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIALLY RADIOACTIVE <DOT REGULATED AND CORROSIVE Special Handling and/or Storage COOL 4C				Preservation	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2	None		
				Type of Container	aGs*	G/P	G/P	P	P	G/P	G/P	G/P		
				No. of Container(s)	3	1	1	1	1	2	1	4		
				Volume	40mL	500mL	500mL	500mL	500mL	1000mL	250mL	1000mL		
SAMPLE ANALYSIS				VOA - 8260A (TCL) (Carbon tetrachloride)	See item (1) in Special Instructions.	TDS - 160.1	Conductivity - 9050	See item (2) in Special Instructions	Gross Alpha, Gross Beta, Total Uranium, Total Radium	Technetium-99	Carbon-14 Medium Level, Iodine-129			
Sample No.	Matrix *	Sample Date	Sample Time											
J10V58	WATER	12-21-05	1044	X	X	X	X	X						
J10V59	WATER	12-21-05	1038	X	X	X	X	X		X	RES 12-21-05			
J10V60	WATER	12-12-05	0655	X										
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Beryllium, Lead, Selenium, Tin) (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)				S=Soil SE=Sediment SO=Solid SL=Sledge W=Water O=Oil A=Air DS=Dry Solid DL=Dry Liquid T=Tissue WL=Wipe L=Liquid V=Vegetation X=Other		
RZ Steffler RZ Steffler		12-21-05 1245		Fed Ex										
Fed Ex		12-23-05/1100		J. Smith		12-23-05/1100								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

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

CLIENT: TNU Hanford

Date: 12-23-05

Purchase Order / Project# /
SAF# / SOW# / Release #: RC-010

LvLI Batch #: 05121982

Sample Custodian: *D. Smith*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <i>FEDEX</i> | Airbill# 7913 1576 5148 |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received <u>cooled</u> or ambient? | Temp 0-3 °C | Cooler # SML-363 |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? N
Short holds taken to wet lab? y | <i>12-23-05</i>
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No | <i>IC Anions - NO2, NO3
out of here.
PO4 only</i> |
| 13. VOA, TOC, TOX free of headspace? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes
<i>NO 2-1-01</i> | <input checked="" type="checkbox"/> No
<i>See #12</i> |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |

SR-002-B

