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# EBERLINE SERVICES

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June 4, 2008

**RECEIVED**  
JAN 22 2009  
**EDMC**



Mr. Steve Trent  
Fluor Hanford Inc.  
1200 Jadwin Avenue  
Richland, WA 99352

Reference: **P.O. #33677**  
**Eberline Services R8-04-141-7084, SDG H3699** ✓

Dear Mr. Trent:

Enclosed is a data report for three solid (soil) samples designated under SAF No. F08-066 received at Eberline Services on April 24, 2008. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

*Melissa Mannion*

Melissa C. Mannion  
Senior Program Manager

MCM/njv

Enclosure: Data Package

00000001

**1.0 GENERAL**

Fluor Hanford Inc. (FH) Sample Delivery Group H3699 was composed of three solid (soil) samples designated under SAF No. F08-066 with a Project Designation of: 216-S-6 Crib Sampling-Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies were noted on the Eberline Services Sample Receipt Checklist included in the original report.

**2.0 ANALYSIS NOTES**

**2.1 Tritium Analysis**

No problems were encountered during the course of the analyses.

**2.2 Nickel-63 Analysis**

No problems were encountered during the course of the analyses.

**2.3 Technetium-99 Analysis**

No problems were encountered during the course of the analyses.

**2.4 Isotopic Thorium Analysis**

No problems were encountered during the course of the analyses.

**3.0 Case Narrative Certification Statement**

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

  
\_\_\_\_\_  
Melissa C. Mannion  
Senior Program Manager

  
\_\_\_\_\_  
Date

SDG 7084  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 33677  
 Case no SDG\_H3699

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 Prepared by \_\_\_\_\_

Melissa Mannion  
 Reviewed by \_\_\_\_\_

Lab id EBRLNE  
 Protocol Fluor  
 Version Ver 1.0  
 Form DVD-TOC  
 Version 3.06  
 Report date 06/04/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

SDG 7084  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 33677  
Case no SDG H3699

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H3699

SDG 7084  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 33677  
Case no SDG H3699

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 H3699

SDG 7084  
 Contact Melissa C. Mannion

**LAB SAMPLE SUMMARY**

Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

LAB	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R804141-01	B1TFC3	C6174, I-002	SOLID		F08-066	F08-066-047	04/03/08 13:05
R804141-02	B1TFC6	C6174, I-003	SOLID		F08-066	F08-066-047	04/10/08 12:10
R804141-03	B1TFC9	C6174, I-003-D	SOLID		F08-066	F08-066-047	04/10/08 12:10
R804141-04	Lab Control Sample		SOLID		F08-066		
R804141-05	Method Blank		SOLID		F08-066		
R804141-06	Duplicate (R804141-01)	C6174, I-002	SOLID		F08-066		04/03/08 13:05

LAB SUMMARY

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SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

C BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SAMPLE		BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
				SOLIDS	AMOUNT				
084	F08-066-047	BITFC3	SOLID	86.1	121 g		04/24/08 21	R804141-01	7084-001
		BITFC6	SOLID	96.5	120 g		04/24/08 14	R804141-02	7084-002
		BITFC9	SOLID	97.0	127 g		04/24/08 14	R804141-03	7084-003
		Method Blank	SOLID					R804141-05	7084-005
		Lab Control Sample	SOLID					R804141-04	7084-004
		Duplicate (R804141-01)	SOLID	86.1	121 g		04/24/08 21	R804141-06	7084-006

QC SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3699

PREP BATCH SUMMARY

SDG 7084  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS	
<b>Alpha Spectroscopy</b>									
TH	SOLID	Thorium, Isotopic in Solids	6152-086	8.0	3		1	1	1/1
<b>Beta Counting</b>									
TC	SOLID	Technetium 99 in Solids	6152-086	13.2	3		1	1	1/1
<b>Liquid Scintillation Counting</b>									
H	SOLID	Tritium in Solids	6152-086	10.0	3		1	1	1/1
NI_L	SOLID	Nickel 63 in Solids	6152-086	11.2	3		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 H3699

SDG 7084

Contact Melissa C. Mannion

Client Hanford

Contract No. 33677

Case no SDG H3699

**LAB WORK SUMMARY**

LAB SAMPLE	CLIENT SAMPLE ID				SUF-					
COLLECTED	LOCATION	MATRIX			FIX	ANALYZED	REVIEWED	BY	METHOD	
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST						
R804141-01	B1TFC3		7084-001	H		05/23/08	05/28/08	BW	Tritium in Solids	
04/03/08	C6174, I-002	SOLID	7084-001	NI_L		05/27/08	05/29/08	BW	Nickel 63 in Solids	
04/24/08	F08-066-047	F08-066	7084-001	TC		05/27/08	05/28/08	BW	Technetium 99 in Solids	
			7084-001	TH		05/22/08	05/28/08	BW	Thorium, Isotopic in Solids	
R804141-02	B1TFC6		7084-002	H		05/23/08	05/28/08	BW	Tritium in Solids	
04/10/08	C6174, I-003	SOLID	7084-002	NI_L		05/27/08	05/29/08	BW	Nickel 63 in Solids	
04/24/08	F08-066-047	F08-066	7084-002	TC		05/27/08	05/28/08	BW	Technetium 99 in Solids	
			7084-002	TH		05/22/08	05/28/08	BW	Thorium, Isotopic in Solids	
R804141-03	B1TFC9		7084-003	H		05/23/08	05/28/08	BW	Tritium in Solids	
04/10/08	C6174, I-003-D	SOLID	7084-003	NI_L		05/27/08	05/29/08	BW	Nickel 63 in Solids	
04/24/08	F08-066-047	F08-066	7084-003	TC		05/27/08	05/28/08	BW	Technetium 99 in Solids	
			7084-003	TH		05/22/08	05/28/08	BW	Thorium, Isotopic in Solids	
R804141-04	Lab Control Sample		7084-004	H		05/23/08	05/28/08	BW	Tritium in Solids	
		SOLID	7084-004	NI_L		05/27/08	05/29/08	BW	Nickel 63 in Solids	
		F08-066	7084-004	TC		05/27/08	05/28/08	BW	Technetium 99 in Solids	
			7084-004	TH		05/22/08	05/28/08	BW	Thorium, Isotopic in Solids	
R804141-05	Method Blank		7084-005	H		05/23/08	05/28/08	BW	Tritium in Solids	
		SOLID	7084-005	NI_L		05/27/08	05/29/08	BW	Nickel 63 in Solids	
		F08-066	7084-005	TC		05/28/08	05/28/08	BW	Technetium 99 in Solids	
			7084-005	TH		05/23/08	05/28/08	BW	Thorium, Isotopic in Solids	
R804141-06	Duplicate (R804141-01)		7084-006	H		05/23/08	05/28/08	BW	Tritium in Solids	
04/03/08	C6174, I-002	SOLID	7084-006	NI_L		05/27/08	05/29/08	BW	Nickel 63 in Solids	
04/24/08		F08-066	7084-006	TC		05/28/08	05/28/08	BW	Technetium 99 in Solids	
			7084-006	TH		05/23/08	05/28/08	BW	Thorium, Isotopic in Solids	

WORK SUMMARY

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SAMPLE DELIVERY GROUP H3699

SDG 7084

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. 33677

Case no SDG H3699

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	F08-066	Tritium in Solids	TRITIUM_COX_LSC	3			1	1	1	6
NI_L	F08-066	Nickel 63 in Solids	NI63_LSC	3			1	1	1	6
TC	F08-066	Technetium 99 in Solids	TC99_TR_SEP_GPC	3			1	1	1	6
TH	F08-066	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	3			1	1	1	6
TOTALS				12			4	4	4	24

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

7084-005

Method Blank

METHOD BLANK

SDG <u>7084</u>	Client/Case no <u>Hanford</u>	<u>SDG H3699</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>33677</u>	
Lab sample id <u>R804141-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7084-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F08-066</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	-2.31	3.5	6.22	400	U	H
Nickel 63	13981-37-8	0.172	1.8	3.01	30.0	U	NI_L
Technetium 99	14133-76-7	-0.061	0.16	0.537	12.0	U	TC
Thorium 228	14274-82-9	-0.138	0.21	0.461	1.00	U	TH
Thorium 230	14269-63-7	-0.068	0.14	0.261	1.00	U	TH
Thorium 232	TH-232	-0.034	0.068	0.261	1.00	U	TH

216-S-6 Crib Sampling - Soil

QC-BLANK #65570
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Lab id <u>EBRLNE</u>
Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
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METHOD BLANKS

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3699

7084-004

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7084</u> Contact <u>Melissa C. Mannion</u>  Lab sample id <u>R804141-04</u> Dept sample id <u>7084-004</u>	Client/Case no <u>Hanford</u> <u>SDG H3699</u> Contract <u>No. 33677</u>  Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>F08-066</u>
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ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS
Tritium	788	16	5.83	400	H	820	33	96	84-116	80-120
Nickel 63	201	5.6	3.02	30.0	NI_L	220	8.8	91	83-117	80-120
Technetium 99	99.0	3.9	0.561	12.0	TC	109	4.4	91	80-120	80-120
Thorium 230	36.8	1.6	0.202	1.00	TH	36.4	1.5	101	85-115	80-120

216-S-6 Crib Sampling - Soil

QC-LCS #65569
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LAB CONTROL SAMPLES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3699

7084-006

B1TFC3

DUPLICATE

SDG <u>7084</u>	Client/Case no <u>Hanford</u>	<u>SDG H3699</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 33677</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>	
Lab sample id <u>R804141-06</u>	Lab sample id <u>R804141-01</u>	Client sample id <u>B1TFC3</u>
Dept sample id <u>7084-006</u>	Dept sample id <u>7084-001</u>	Location/Matrix <u>C6174, I-002</u> <u>SOLID</u>
	Received <u>04/24/08</u>	Collected/Weight <u>04/03/08 13:05</u> <u>121 g</u>
% solids <u>86.1</u>	% solids <u>86.1</u>	Custody/SAF No <u>F08-066-047</u> <u>F08-066</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
Tritium	-3.19	2.4	4.30	400	U	H	-3.22	2.3	4.26	U	-	0	
Nickel 63	-0.472	2.0	3.44	30.0	U	NI_L	-0.255	1.9	3.19	U	-	0.2	
Technetium 99	-0.046	0.19	0.584	12.0	U	TC	0.004	0.19	0.587	U	-	0.4	
Thorium 228	0.679	0.33	0.310	1.00		TH	0.820	0.45	0.458		19	113	0.5
Thorium 230	0.225	0.26	0.307	1.00	U	TH	0.592	0.37	0.283		90	167	1.6
Thorium 232	0.642	0.32	0.246	1.00		TH	0.962	0.38	0.283		40	95	1.3

216-S-6 Crib Sampling - Soil

QC-DUP#1 65571

Lab id <u>EBRLNE</u>
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EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3699

7084-001

B1TFC3

DATA SHEET

SDG <u>7084</u>	Client/Case no <u>Hanford</u>	SDG <u>H3699</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>33677</u>	
Lab sample id <u>R804141-01</u>	Client sample id <u>B1TFC3</u>	
Dept sample id <u>7084-001</u>	Location/Matrix <u>C6174, I-002</u>	<u>SOLID</u>
Received <u>04/24/08</u>	Collected/Weight <u>04/03/08 13:05</u>	<u>121 g</u>
% solids <u>86.1</u>	Custody/SAF No <u>F08-066-047</u>	<u>F08-066</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	<u>-3.22</u>	2.3	4.26	400	U	H
Nickel 63	13981-37-8	<u>-0.255</u>	1.9	3.19	30.0	U	NI_L
Technetium 99	14133-76-7	0.004	0.19	0.587	12.0	U	TC
Thorium 228	14274-82-9	0.820	0.45	0.458	1.00		TH
Thorium 230	14269-63-7	0.592	0.37	0.283	1.00		TH
Thorium 232	TH-232	0.962	0.38	0.283	1.00		TH

216-S-6 Crib Sampling - Soil

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EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3699

7084-002

B1TFC6

DATA SHEET

SDG <u>7084</u>	Client/Case no <u>Hanford</u>	SDG <u>H3699</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 33677</u>	
Lab sample id <u>R804141-02</u>	Client sample id <u>B1TFC6</u>	
Dept sample id <u>7084-002</u>	Location/Matrix <u>C6174, I-003</u>	<u>SOLID</u>
Received <u>04/24/08</u>	Collected/Weight <u>04/10/08 12:10</u>	<u>120 g</u>
% solids <u>96.5</u>	Custody/SAF No <u>F08-066-047</u>	<u>F08-066</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.067	2.9	5.03	400	U	H
Nickel 63	13981-37-8	15.4	2.5	3.39	30.0		NI_L
Technetium 99	14133-76-7	0.124	0.21	0.548	12.0	U	TC
Thorium 228	14274-82-9	0.520	0.38	0.452	1.00		TH
Thorium 230	14269-63-7	0.469	0.38	0.449	1.00		TH
Thorium 232	TH-232	0.563	0.29	0.359	1.00		TH

216-S-6 Crib Sampling - Soil

DATA SHEETS

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EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3699

7084-003

B1TFC9

DATA SHEET

SDG <u>7084</u>	Client/Case no <u>Hanford</u>	SDG <u>H3699</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 33677</u>	
Lab sample id <u>R804141-03</u>	Client sample id <u>B1TFC9</u>	
Dept sample id <u>7084-003</u>	Location/Matrix <u>C6174, I-003-D</u>	<u>SOLID</u>
Received <u>04/24/08</u>	Collected/Weight <u>04/10/08 12:10</u>	<u>127 g</u>
% solids <u>97.0</u>	Custody/SAF No <u>F08-066-047</u>	<u>F08-066</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-1.91	2.7	4.80	400	U	H
Nickel 63	13981-37-8	15.6	2.9	4.04	30.0		NI_L
Technetium 99	14133-76-7	0.131	0.17	0.509	12.0	U	TC
Thorium 228	14274-82-9	0.085	0.17	0.405	1.00	U	TH
Thorium 230	14269-63-7	0.504	0.34	0.321	1.00		TH
Thorium 232	TH-232	0.546	0.34	0.321	1.00		TH

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DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBRLINE</u>
Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/04/08</u>

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3699

Client Hanford

Contract No. 33677

Contract SDG H3699

**LAB METHOD SUMMARY**

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test TH Matrix SOLID

SDG 7084

Contact Melissa C. Mannion

**RESULTS**

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 6152-086				
R804141-01		7084-001	B1TFC3	0.592
R804141-02		7084-002	B1TFC6	0.469
R804141-03		7084-003	B1TFC9	0.504
R804141-04		7084-004	Lab Control Sample	ok
R804141-05		7084-005	Method Blank	U
R804141-06		7084-006	Duplicate (R804141-01)	ok U

Nominal values and limits from method RDLs (pCi/g) 1.00  
216-S-6 Crib Sampling - Soil

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6152-086			2σ prep error 8.0 %		Reference Lab Notebook #6152		pg. 84								
R804141-01		B1TFC3	0.458	0.250			85		154			49	05/21/08	05/22	SS-038
R804141-02		B1TFC6	0.452	0.250			85		154			42	05/21/08	05/22	SS-040
R804141-03		B1TFC9	0.405	0.250			82		155			42	05/21/08	05/22	SS-042
R804141-04		Lab Control Sample	0.202	0.250			85		968				05/21/08	05/22	SS-042
R804141-05		Method Blank	0.461	0.250			71		180				05/21/08	05/23	SS-027
R804141-06		Duplicate (R804141-01)	0.310	0.250			94		181			50	05/21/08	05/23	SS-031
Nominal values and limits from method			1.00	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
SPP-061	Determination of Moisture Content in Solid Samples rev 0	
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES ± 2 SD	MDA <u>0.381 ± 0.210</u>
FOR 6 SAMPLES	YIELD <u>84 ± 15</u>

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Lab id EBRLNE  
 Protocol Fluor  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 06/04/08

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3699

Test TC Matrix SOLID  
 SDG 7084  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 33677  
 Contract SDG H3699

**LAB METHOD SUMMARY**

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

**RESULTS**

LAB	RAW	SUF-	Technetium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 6152-086				
R804141-01		7084-001	B1TFC3	U
R804141-02		7084-002	B1TFC6	U
R804141-03		7084-003	B1TFC9	U
R804141-04		7084-004	Lab Control Sample	ok
R804141-05		7084-005	Method Blank	U
R804141-06		7084-006	Duplicate (R804141-01)	- U

Nominal values and limits from method RDLs (pCi/g) 12.0  
 216-S-6 Crib Sampling - Soil

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6152-086 2σ prep error 13.2 % Reference Lab Notebook #6152 pg. 84															
R804141-01		B1TFC3	0.587	1.00			88		50			54	05/22/08	05/27	GRB-221
R804141-02		B1TFC6	0.548	1.00			94		50			47	05/22/08	05/27	GRB-222
R804141-03		B1TFC9	0.509	1.00			101		50			47	05/22/08	05/27	GRB-223
R804141-04		Lab Control Sample	0.561	1.00			91		50				05/22/08	05/27	GRB-224
R804141-05		Method Blank	0.537	1.00			97		50				05/22/08	05/28	GRB-228
R804141-06		Duplicate (R804141-01)	0.584	1.00			98		50			55	05/22/08	05/28	GRB-229

Nominal values and limits from method 12.0 1.00 20-105 50 180

PROCEDURES REFERENCE TC99\_TR\_SEP\_GPC  
 SPP-062 Sample Aliquoting, rev 0  
 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 0.554 ± 0.059  
 FOR 6 SAMPLES YIELD 95 ± 10

Lab id EBRLNE  
 Protocol Fluor  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 06/04/08

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3699

Client <u>Hanford</u>
Contract No. <u>33677</u>
Contract <u>SDG H3699</u>

Test H <u>Matrix SOLID</u>
SDG <u>7084</u>
Contact <u>Melissa C. Mannion</u>

**LAB METHOD SUMMARY**

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

**RESULTS**

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Tritium
Preparation batch 6152-086					
R804141-01		7084-001	B1TFC3		U
R804141-02		7084-002	B1TFC6		U
R804141-03		7084-003	B1TFC9		U
R804141-04		7084-004	Lab Control Sample		ok
R804141-05		7084-005	Method Blank		U
R804141-06		7084-006	Duplicate (R804141-01)	-	U

Nominal values and limits from method RDLs (pCi/g) 400  
216-S-6 Crib Sampling - Soil

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6152-086 2σ prep error 10.0 % Reference Lab Notebook #6152 pg. 84															
R804141-01		B1TFC3	4.26	0.432			100		50			50	05/22/08	05/23	LSC-004
R804141-02		B1TFC6	5.03	0.366			100		50			43	05/22/08	05/23	LSC-004
R804141-03		B1TFC9	4.80	0.388			100		50			43	05/22/08	05/23	LSC-004
R804141-04		Lab Control Sample	5.83	0.300			100		50				05/22/08	05/23	LSC-004
R804141-05		Method Blank	6.22	0.300			100		50				05/22/08	05/23	LSC-004
R804141-06		Duplicate (R804141-01)	4.30	0.434			100		50			50	05/22/08	05/23	LSC-004

Nominal values and limits from method 400 0.300 25 180

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

AVERAGES ± 2 SD	MDA	<u>5.07</u> ± <u>1.61</u>
FOR 6 SAMPLES	YIELD	<u>100</u> ± <u>0</u>

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Lab id	<u>EBRLNE</u>
Protocol	<u>Fluor</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-LMS</u>
Version	<u>3.06</u>
Report date	<u>06/04/08</u>

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3699

Client <u>Hanford</u>
Contract No. <u>33677</u>
Contract <u>SDG H3699</u>

**LAB METHOD SUMMARY**

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test <u>NI L Matrix SOLID</u>
SDG <u>7084</u>
Contact <u>Melissa C. Mannion</u>

**RESULTS**

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63
Preparation batch 6152-086				
R804141-01		7084-001	B1TFC3	U
R804141-02		7084-002	B1TFC6	15.4
R804141-03		7084-003	B1TFC9	15.6
R804141-04		7084-004	Lab Control Sample	ok
R804141-05		7084-005	Method Blank	U
R804141-06		7084-006	Duplicate (R804141-01)	- U

Nominal values and limits from method RDLs (pCi/g) 30.0  
 216-S-6 Crib Sampling - Soil

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6152-086			2σ prep error 11.2 %		Reference Lab Notebook #6152		pg. 84								
R804141-01		B1TFC3	3.19	0.500			91		50			54	05/27/08	05/27	LSC-004
R804141-02		B1TFC6	3.39	0.500			87		50			47	05/27/08	05/27	LSC-004
R804141-03		B1TFC9	4.04	0.500			74		50			47	05/27/08	05/27	LSC-004
R804141-04		Lab Control Sample	3.02	0.500			96		50				05/27/08	05/27	LSC-004
R804141-05		Method Blank	3.01	0.500			97		50				05/27/08	05/27	LSC-004
R804141-06		Duplicate (R804141-01)	3.44	0.500			86		50			54	05/27/08	05/27	LSC-004
Nominal values and limits from method			30.0	0.500			30-105		25						180

PROCEDURES	REFERENCE	NI63_LSC
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-280	Nickel-63 Purification, rev 3

AVERAGES ± 2 SD	MDA <u>3.35</u> ± <u>0.767</u>
FOR 6 SAMPLES	YIELD <u>88</u> ± <u>17</u>

Lab id <u>EBRLNE</u>
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

SDG 7084  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 33677  
Case no SDG H3699

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 H3699

SDG 7084  
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

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

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SDG 7084  
 Contact Melissa C. Mannion

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Client Hanford  
 Contract No. 33677  
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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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SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

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Client Hanford  
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 Case no SDG\_H3699

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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SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

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Client Hanford  
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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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SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

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 Contract No. 33677  
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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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Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

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

1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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Protocol Fluor

Version Ver 1.0

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SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

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Client Hanford  
 Contract No. 33677  
 Case no SDG\_H3699

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

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

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 Protocol Fluor  
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SDG 7084

Contact Melissa C. Mannion

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MATRIX SPIKE

for the recovery.

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

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

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 28

Lab id EBRLNE

Protocol Fluor

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 06/04/08

00000031

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

SDG 7084

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 33677

Case no SDG H3699

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'

REPORT GUIDES

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SUMMARY DATA SECTION

Page 29

Lab id EBRLNE

Protocol Fluor

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 06/04/08

00000032

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

SDG 7084

Contact Melissa C. Mannion

Client Hanford

Contract No. 33677

Case no SDG\_H3699

GUIDE, cont.

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.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 30

Lab id EBRLNE  
 Protocol Fluor  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 06/04/08

00000033

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

GUIDE, cont.

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Fluor  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 06/04/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3699

SDG 7084  
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
 Contract No. 33677  
 Case no SDG H3699

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.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 32

Lab id EBRLNE  
 Protocol Fluor  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 06/04/08

00000035

**COLLECTOR**  
NCO Sampler *D Connolly*

**SAMPLING LOCATION**  
C6174, I-002

**ICE CHEST NO.**  
*QURP-05-015*

**SHIPPED TO**  
Eberline Services

**COMPANY CONTACT**  
TRENT, SJ

**TELEPHONE NO.**  
373-5869

**PROJECT DESIGNATION**  
216-S-6 Crib Sampling - Soil *H3699 (7084)*

**FIELD LOGBOOK NO.**  
*HWF-N-585-5 pg 23*

**ACTUAL SAMPLE DEPTH**  
*7'-9'*

**OFFSITE PROPERTY NO.**  
See PTR

**PROJECT COORDINATOR**  
WIDRIG, DL

**SAF NO.**  
F08-066

**COA**  
123210ES20

**BILL OF LADING/AIR BILL NO.**  
See PTR

**PRICE CODE** 8N

**AIR QUALITY**

**METHOD OF SHIPMENT**  
FEDERAL EXPRESS

**DATA TURNAROUND**  
45 Days / 45 Days

**MATRIX\***

**POSSIBLE SAMPLE HAZARDS/ REMARKS**  
Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

*mar 3 4/23/08*

**SPECIAL HANDLING AND/OR STORAGE**  
Radioactive tie to B1TFB0

**PRESERVATION** None

**TYPE OF CONTAINER** G/P

**NO. OF CONTAINER(S)** 1

**VOLUME** 120mL

**SAMPLE ANALYSIS** SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B1TFC3	SOIL	4-3-8	1305	✓					

*lot 4* *024875*

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM <i>D Connolly</i>	RECEIVED BY/STORED IN <i>ON SITE STORAGE Ret</i>	DATE/TIME 4-3-8 1330
RELINQUISHED BY/REMOVED FROM <i>ON SITE Ret</i>	RECEIVED BY/STORED IN <i>D Connolly</i>	DATE/TIME 4-10-8 1330
RELINQUISHED BY/REMOVED FROM <i>D Connolly</i>	RECEIVED BY/STORED IN <i>IND 245 Ret #1</i>	DATE/TIME 4-15-8 1500
RELINQUISHED BY/REMOVED FROM <i>10741-RET #1</i>	RECEIVED BY/STORED IN <i>K. Harrison</i>	DATE/TIME 4/22/08 0907
RELINQUISHED BY/REMOVED FROM <i>K. Harrison</i>	RECEIVED BY/STORED IN <i>FED EX</i>	DATE/TIME 4/23/08 1000
RELINQUISHED BY/REMOVED FROM <i>FED EX</i>	RECEIVED BY/STORED IN <i>KW</i>	DATE/TIME 04/24/08 09:30

**SPECIAL INSTRUCTIONS**

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

\*\* Analytical batch QC must be run on a sample associated with this SAF.  
(1) Tritium - H3; Technetium-99 {Technetium-99} Nickel-63; Isotopic Thorium {Thorium-232}

00000036

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

**COLLECTOR**  
NCO Sampler *D Connolly*

**SAMPLING LOCATION**  
C6174, I-003

**ICE CHEST NO.**  
*GRP-05-015*

**SHIPPED TO**  
Eberline Services

**COMPANY CONTACT**  
TRENT, SJ

**TELEPHONE NO.**  
373-5869

**PROJECT COORDINATOR**  
WIDRIG, DL

**PROJECT DESIGNATION**  
216-S-6 Crib Sampling - Soil *H3699 (7084)*

**SAF NO.**  
F08-066

**FIELD LOGBOOK NO.**  
*HNF-N-5855 pg 25*

**ACTUAL SAMPLE DEPTH**  
*15' - 17.5'*

**COA**  
123210ES20

**METHOD OF SHIPMENT**  
FEDERAL EXPRESS

**BILL OF LADING/AIR BILL NO.**  
See PTR

**PRICE CODE** 8N

**AIR QUALITY**

**DATA TURNAROUND**  
45 Days / 45 Days

**MATRIX\***

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

**POSSIBLE SAMPLE HAZARDS/ REMARKS**  
Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

*MAB 4/23/08*

**SPECIAL HANDLING AND/OR STORAGE**  
Radioactive tie to B1TFB1

<b>PRESERVATION</b>	None
<b>TYPE OF CONTAINER</b>	G/P
<b>NO. OF CONTAINER(S)</b>	1
<b>VOLUME</b>	120mL
<b>SAMPLE ANALYSIS</b>	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1TFC6	SOIL	4-10-8	1210	✓

*Lot # 024815*

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM <i>D Connolly OEG</i>		4-10-8 1305	ON SITE Fridge	4-10-8 1305
RELINQUISHED BY/REMOVED FROM <i>on site Fridge</i>		4-16-8 1100	<i>D Connolly OEG</i>	4-16-8 1100
RELINQUISHED BY/REMOVED FROM <i>D Connolly OEG</i>		4-16-8 1600	<i>Mous Ref #3</i>	4-16-8 1600
RELINQUISHED BY/REMOVED FROM <i>Mous Ref #3</i>		4/23/08 0907	<i>K. Palazzo</i>	4/23/08 0907
RELINQUISHED BY/REMOVED FROM <i>K. Palazzo</i>		4/23/08 1030	FEDEX	
RELINQUISHED BY/REMOVED FROM <i>FED EX</i>			<i>Pun</i>	04/24/08 09:30

**SPECIAL INSTRUCTIONS**

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

\*\* Analytical batch QC must be run on a sample associated with this SAF.  
(1) Tritium - H3; Technetium-99 {Technetium-99} Nickel-63; Isotopic Thorium {Thorium-232}

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

000000037

COLLECTOR  
NCO Sampler *D Connolly*

COMPANY CONTACT  
TRENT, SJ  
TELEPHONE NO.  
373-5869

PROJECT COORDINATOR  
WIDRIG, DL

PRICE CODE 8N

DATA  
TURNAROUND

SAMPLING LOCATION  
C6174, I-003-D

PROJECT DESIGNATION  
216-S-6 Crib Sampling - Soil  
*H3699 (7084)*

SAF NO.  
F08-066

AIR QUALITY

45 Days / 45  
Days

ICE CHEST NO.  
*GRP-05-015*

FIELD LOGBOOK NO.  
*HN 12-N-585-5 pg 25 15'-17.5'*

COA  
123210ES20

METHOD OF SHIPMENT  
FEDERAL EXPRESS

SHIPPED TO  
Eberline Services

OFFSITE PROPERTY NO.  
See PTR

BILL OF LADING/AIR BILL NO.  
See PTR

MATRIX\*  
A=Air  
DL=Drum  
Liquids  
DS=Drum  
Solids  
L=Liquid  
O=Oil  
S=Soil  
SE=Sediment  
T=Tissue  
V=Vegetation  
W=Water  
WI=Wipe  
X=Other

**POSSIBLE SAMPLE HAZARDS/ REMARKS**  
Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)  
*MAB 4/23/08*

**SPECIAL HANDLING AND/OR STORAGE**  
Radioactive tie to B1TFB1

PRESERVATION None

TYPE OF CONTAINER G/P

NO. OF CONTAINER(S) 1

VOLUME 120mL

SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B1TFC9	SOIL	4-10-8	1210 ✓

*024875*

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
<i>D Connolly</i>	4-10-8 1315	<i>on site fridge</i>	4-10-8 1315
<i>on site fridge</i>	4-16-8 1100	<i>D Connolly</i>	4-16-8 1100
<i>D Connolly</i>	4-16-8 1600	<i>MORIS REF#3</i>	4-16-8 1600
<i>MORIS REF#3</i>	4/21/08 0907	<i>Flaherty</i>	4/21/08 0907
<i>Flaherty</i>	4/23/08 1030	<i>FED EX</i>	
<i>FED EX</i>		<i>Flaherty</i>	04/24/08 09:30

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

\*\* Analytical batch QC must be run on a sample associated with this SAF.  
(1) Tritium - H3; Technetium-99 {Technetium-99} Nickel-63; Isotopic Thorium {Thorium-232}

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME



**RICHMOND, CA LABORATORY**  
SAMPLE RECEIPT CHECKLIST

*JK* 4/24/08

Client: F. HANFORD City MCCLEND State WA  
 Date/Time received 04/24/08 09:38 CoC No. FO8-066-047, 048 649  
 Container I.D. No. GRP-05-015 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: 3 Sample Matrix S
7. Number of containers per sample: 1 (Or see CoC         )
8. Samples are in correct container Yes [] No [ ]
9. Paperwork agrees with samples? Yes [] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels []
11. Samples are: In good condition [] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH          Preservative
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date
15. Inspected by *Mur* Date: 04/24/08 Time: 11:00

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
<u>BITFC3</u>	<u>150</u>						
<u>BITFC6</u>	<u>1600</u>						
<u>BITFC9</u>	<u>1600</u>						

Ion Chamber Ser. No.          Calibration date           
 Alpha Meter Ser. No.          Calibration date           
 Beta/Gamma Meter Ser. No. 100482 Calibration date 09/24/07

RECEIVED JUNE 24, 2008

Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD F08-066 #3699

DATE RECEIVED: 04/24/08

LVL LOT # :0804L988

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BITFC3						
% SOLIDS	001	S	08L&S041	04/03/08	04/25/08	04/26/08
% SOLIDS	001 REP	S	08L&S041	04/03/08	04/25/08	04/26/08
CHROMIUM VI	001	S	08LVI039	04/03/08	04/28/08	04/28/08
CHROMIUM VI	001 REP	S	08LVI039	04/03/08	04/28/08	04/28/08
CHROMIUM VI	001 MS	S	08LVI039	04/03/08	04/28/08	04/28/08
CHROMIUM VI	001 MSD	S	08LVI039	04/03/08	04/28/08	04/28/08
SULFIDE	001	S	08LSD030	04/03/08	04/28/08	04/28/08
SPECIFIC CONDUCTANCE	001	S	08LSP008	04/03/08	04/30/08	04/30/08
SPECIFIC CONDUCTANCE	001 REP	S	08LSP008	04/03/08	04/30/08	04/30/08

BITFC6

CHROMIUM VI	002	S	08LVI039	04/10/08	04/28/08	04/28/08
SULFIDE	002	S	08LSD030	04/10/08	04/28/08	04/28/08
SPECIFIC CONDUCTANCE	002	S	08LSP008	04/10/08	04/30/08	04/30/08

BITFC9

CHROMIUM VI	003	S	08LVI039	04/10/08	04/28/08	04/28/08
SULFIDE	003	S	08LSD030	04/10/08	04/28/08	04/28/08
SULFIDE	003 REP	S	08LSD030	04/10/08	04/28/08	04/28/08
SULFIDE	003 MS	S	08LSD030	04/10/08	04/28/08	04/28/08
SPECIFIC CONDUCTANCE	003	S	08LSP008	04/10/08	04/30/08	04/30/08

LAB QC:

CHROMIUM VI	MB1	S	08LVI039	N/A	04/28/08	04/28/08
CHROMIUM VI	MB1 BS	S	08LVI039	N/A	04/28/08	04/28/08
CHROMIUM VI	MB1 BSD	S	08LVI039	N/A	04/28/08	04/28/08
SULFIDE	MB1	S	08LSD030	N/A	04/28/08	04/28/08
SULFIDE	MB1 BS	S	08LSD030	N/A	04/28/08	04/28/08
SULFIDE	MB1 BSD	S	08LSD030	N/A	04/28/08	04/28/08
SPECIFIC CONDUCTANCE	MB1	W	08LSP008	N/A	04/30/08	04/30/08
SPECIFIC CONDUCTANCE	MB1 BS	W	08LSP008	N/A	04/30/08	04/30/08

000000001



## Analytical Report

Client: TNU-HANFORD F08-066 H3699  
LVL#: 0804L988

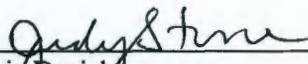
W.O.#: 11343-606-001-9999-00  
Date Received: 04-24-08

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

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

3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits.
8. The replicate analyses were within the 20% RPD control limit.
9. Results for soil samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

6/16/08  
Date

njpl04-988

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

**Lionville Laboratory Incorporated**

**WET CHEMISTRY**

**METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS**

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	✓ ___ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		✓ ___ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		___ 9010B	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ 9071A	
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions ___	___ D240-87(mod)	___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		___ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		✓ ___ 9030B(mod) / 9034	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		___ 9095A	
Other: <i>Specific Conductance</i>	Method: <i>SW9050A (mod.)</i>		
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 05/01/08

CLIENT: TNU-HANFORD F08-066  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L988

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B1TFC3	% Solids	88.4	%	0.01	1.0
		Chromium VI	0.23	u MG/KG	0.23	1.0
		Sulfide	28.2	u MG/KG	28.2	1.0
		Specific Conductance	79.5	UMHOS/C	1.0	1.0
-002	B1TFC6	Chromium VI	0.20	u MG/KG	0.20	1.0
		Sulfide	37.7	u MG/KG	37.7	1.0
		Specific Conductance	70.3	UMHOS/C	1.0	1.0
-003	B1TFC9	Chromium VI	0.20	u MG/KG	0.20	1.0
		Sulfide	39.9	u MG/KG	39.9	1.0
		Specific Conductance	89.4	UMHOS/C	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/01/08

CLIENT: TNU-HANFORD F08-066

LVL LOT #: 0804L988

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LVI039-MB1	Chromium VI	0.20	u MG/KG	0.20	1.0
BLANK10	08LSD030-MB1	Sulfide	20.4	u MG/KG	20.4	1.0
BLANK10	08LSP008-MB1	Specific Conductance	1.0	u UMHOS/C	1.0	1.0

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Lionville Laboratory, Inc.

ISORGANICS ACCURACY REPORT 05/01/08

CLIENT: THU-HANFORD P08-066  
WORK ORDER: 11343-006-001-9999-00

LVL LOT #: 0804L988

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	RECOVER	DILUTION FACTOR (SPK)
-001	BITFC3	Soluble Chromium VI	4.8	0.23u	4.5	105.3	1.0
		Insoluble Chromium VI	1200	0.23u	1390	100.2	100
-001	BITFC9	Sulfide	495	18.0	546	87.3	1.0
BLANK10	08LV1039-MB1	Soluble Chromium VI	4.1	0.20u	4.0	102.4	1.0
		Insoluble Chromium VI	1110	0.20u	1110	100.4	100
BLANK10	08LSD030-MB1	Sulfide	271	20.4 u	282	96.1	1.0
		Sulfide MSD	236	20.4 u	252	93.8	1.0
BLANK10	08LEP008-MB1	Specific Conductance	723	1.0 u	718	100.7	1.0

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Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 05/01/08

CLIENT: TNU-HANFORD F08-066  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L988

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
BLANK10	08LSD030-MB1	Sulfide	96.1	93.8	2.5	

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Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/01/08

CLIENT: TNU-HANFORD F08-066

LVL LOT #: 0804L988

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	BITFC3	% Solids	88.4	87.2	1.4	1.0
		Chromium VI	0.23u	0.23u	NC	1.0
		Specific Conductance	79.5	76.2	4.3	1.0
-003REP	BITFC9	Sulfide	39.9 u	41.4 u	NC	1.0

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Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F08-066-061

PAGE 1 OF 1

<b>COLLECTOR</b> NCO Sampler <i>D Connolly</i>	<b>COMPANY CONTACT</b> TRENT, SJ	<b>TELEPHONE NO.</b> 373-5869	<b>PROJECT COORDINATOR</b> WIDRIG, DL	<b>PRICE CODE</b> 8N	<b>DATA TURNAROUND</b> 45 Days / 45 Days
<b>SAMPLING LOCATION</b> C6174, I-003-D	<b>PROJECT DESIGNATION</b> 216-S-6 Crib Sampling - Soil		<b>SAF NO.</b> F08-066	<b>AIR QUALITY</b> <input type="checkbox"/>	
<b>ICE CHEST NO.</b> <i>NOONER 1</i>	<b>FIELD LOGBOOK NO.</b> <i>HNF-N-5855 pg 25</i>	<b>ACTUAL SAMPLE DEPTH</b> <i>15' - 17.5'</i>	<b>COA</b> 123210ES20	<b>METHOD OF SHIPMENT</b> FEDERAL EXPRESS	
<b>SHIPPED TO</b> Lionville Laboratory Incorporated	<b>OFFSITE PROPERTY NO.</b> See PTR		<b>BILL OF LADING/AIR BILL NO.</b> See PTR		

<b>MATRIX*</b> A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993) <i>MAB 4/23/08</i>	<b>PRESERVATION</b>	Cool-4C																		
		<b>TYPE OF CONTAINER</b>	G																		
		<b>NO. OF CONTAINER(S)</b>	1																		
		<b>VOLUME</b>	120mL																		
<b>SPECIAL HANDLING AND/OR STORAGE</b> Radioactive Tie To: B1TFB1		<b>SAMPLE ANALYSIS</b>	Chromium Hex - 7196; Sulfides - 9030 (Sulfide)																		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME																		
B1TFC9	SOIL	4-10-8	1210	✓																	

CHAIN OF POSSESSION	DATE/TIME	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM <i>D Connolly</i>	4-10-8 1315	RECEIVED BY/STORED IN <i>ON SITE Frigle</i>	4-10-8 1315
RELINQUISHED BY/REMOVED FROM <i>on site Frigle</i>	4-16-8 1100	RECEIVED BY/STORED IN <i>D Connolly</i>	4-16-8 1100
RELINQUISHED BY/REMOVED FROM <i>D Connolly</i>	4-16-8 1600	RECEIVED BY/STORED IN <i>MOTUS-REF #3</i>	4-16-8 1600
RELINQUISHED BY/REMOVED FROM <i>MOTUS-REF #3</i>	4/23/08 0907	RECEIVED BY/STORED IN <i>[Signature]</i>	4/23/08 0907
RELINQUISHED BY/REMOVED FROM <i>[Signature]</i>	4/23/08 1030	RECEIVED BY/STORED IN <i>FED EX</i>	
RELINQUISHED BY/REMOVED FROM <i>[Signature]</i>	4-24-08/11:55	RECEIVED BY/STORED IN <i>[Signature]</i>	4-24-08/11:55

**SPECIAL INSTRUCTIONS**

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

\*\* Analytical batch QC must be run on a sample associated with this SAF.

<b>LABORATORY SECTION</b>	<b>RECEIVED BY</b>	<b>TITLE</b>	<b>DATE/TIME</b>
<b>FINAL SAMPLE DISPOSITION</b>	<b>DISPOSAL METHOD</b>	<b>DISPOSED BY</b>	<b>DATE/TIME</b>

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

CLIENT: TNU Hanford  
 Project/SAF/SOW/Release #: F08-066

Date: 4.24.08

LvLI Batch #: 0804L988

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |   |
|---|---|---|
| 1. Samples Hand Delivered or Shipped?   | Carrier <u>FEDEX</u>  | Airbill # <u>7989 2669 9910</u>           |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | <input type="checkbox"/> No Seals         |
| 3. Outside of coolers or shipping containers are free from damage?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | Comments:                                 |
| 4. All expected paperwork received (coc & 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>2.1</u> °C  | Cooler # <u>1</u>                         |
| How was the temperature taken?  | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 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 (Client & LvLI) signed & 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?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 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? (If #5 is no, then this is no.)   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 12. Samples received within hold times?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | <input checked="" type="checkbox"/> N/A   |
| Short holds taken to wet lab?   | <input type="checkbox"/> Yes <input type="checkbox"/> No                    |   |
| 13. VOA, TOC, TOX free of headspace?  | <input type="checkbox"/> Yes <input type="checkbox"/> No                    | <input checked="" 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 that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 16. Project Manager contacted concerning any discrepancies?   | <input type="checkbox"/> Yes <input type="checkbox"/> No                    | <input checked="" type="checkbox"/> N/A   |
| Person Contacted _____  | Date _____  |   |

