



EBERLINE
SERVICES

0065012

February 10, 2005

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

Reference: P.O. #630
Eberline Services R4-11-225-7166, SDG H2856

Dear Mr. Trent:

Enclosed is the data report for one solid sample designated under SAF No. F03-025 received at Eberline Services on November 24, 2004. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

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MAY 17 2005
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Analytical Services
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Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2856 was composed of one solid (soil) sample designated under SAF No. F03-025 with a Project Designation of: 200-LW-1/LW-2 Characterization-Soil.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Gamma Spectroscopy

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

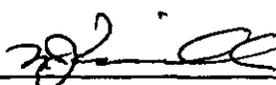
EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H2856

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

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Prepared by

Mel Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 02/10/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG H2856

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

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Form DVD-RG

Version 3.06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

Contract No. 630

Case no SDG H2856

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

SAMPLE SUMMARY

SDG 7166
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2856

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF CUSTODY	COLLECTED
				SAMPLE ID	SAF NO		
B191B8	216-T-28; 157.5ft-160ft	SOLID		R411225-01	F03-025	F03-025-075	11/20/04 10:15
Method Blank		SOLID		R411225-03	F03-025		
Lab Control Sample		SOLID		R411225-02	F03-025		
Duplicate (R411225-01)	216-T-28; 157.5ft-160ft	SOLID		R411225-04	F03-025		11/20/04 10:15

SAMPLE SUMMARY

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2856

C BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
166	F03-025-075	B191B8	SOLID	97.3	374.2 g		11/24/04 4	R411225-01		7166-001
		Method Blank	SOLID					R411225-03		7166-003
		Lab Control Sample	SOLID					R411225-02		7166-002
		Duplicate (R411225-01)	SOLID	97.3	374.2 g		11/24/04 4	R411225-04		7166-004

QC SUMMARY

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SUMMARY DATA SECTION

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 Form DVD-QS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2856

TEST MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED		QUALIFIERS
				CLIENT	MORE RE BLANK	
Alpha Spectroscopy						
TH	SOLID	Thorium, Isotopic in Solids	7113-014	5.0	1	1 1 1/1
Beta Counting						
SR	SOLID	Total Strontium in Solids	7113-014	10.0	1	1 1 1/1
TC	SOLID	Technetium 99 in Solids	7113-014	10.0	1	1 1 1/1
Gamma Spectroscopy						
GAM	SOLID	Gamma Scan	7113-014	15.0	1	1 1 1/1
Liquid Scintillation Counting						
C	SOLID	Carbon 14 in Solids	7113-014	10.0	1	1 1 1/1
H	SOLID	Tritium in Solids	7113-014	10.0	1	1 1 1/1
NI_L	SOLID	Nickel 63 in Solids	7113-014	10.0	1	1 1 1/1

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2856

WORK SUMMARY

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUP-					
USTODY	SAF No	RECEIVED			FIX	ANALYZED	REVIEWED	BY	METHOD	
191B8		R411225-01	7166-001	C		01/05/05	01/22/05	MWT	Carbon 14 in Solids	
16-T-28; 157.5ft-160ft	SOLID	11/20/04	7166-001	GAM		02/04/05	02/07/05	CSS	Gamma Scan	
03-025-075	F03-025	11/24/04	7166-001	H		01/05/05	01/21/05	MWT	Tritium in Solids	
			7166-001	NI_L		12/25/04	12/30/04	MWT	Nickel 63 in Solids	
			7166-001	SR		12/20/04	12/29/04	MWT	Total Strontium in Solids	
			7166-001	TC		01/08/05	01/17/05	MWT	Technetium 99 in Solids	
			7166-001	TH		12/24/04	01/22/05	MWT	Thorium, Isotopic in Solids	
Method Blank		R411225-03	7166-003	C		01/05/05	01/22/05	MWT	Carbon 14 in Solids	
	SOLID		7166-003	GAM		01/10/05	02/07/05	CSS	Gamma Scan	
	F03-025		7166-003	H		01/05/05	01/21/05	MWT	Tritium in Solids	
			7166-003	NI_L		12/25/04	12/30/04	MWT	Nickel 63 in Solids	
			7166-003	SR		12/20/04	12/29/04	MWT	Total Strontium in Solids	
			7166-003	TC		01/07/05	01/17/05	MWT	Technetium 99 in Solids	
			7166-003	TH		12/24/04	01/22/05	MWT	Thorium, Isotopic in Solids	
Lab Control Sample		R411225-02	7166-002	C		01/05/05	01/22/05	MWT	Carbon 14 in Solids	
	SOLID		7166-002	GAM		01/28/05	02/07/05	CSS	Gamma Scan	
	F03-025		7166-002	H		01/05/05	01/21/05	MWT	Tritium in Solids	
			7166-002	NI_L		12/25/04	12/30/04	MWT	Nickel 63 in Solids	
			7166-002	SR		12/20/04	12/29/04	MWT	Total Strontium in Solids	
			7166-002	TC		01/07/05	01/17/05	MWT	Technetium 99 in Solids	
			7166-002	TH		12/24/04	01/22/05	MWT	Thorium, Isotopic in Solids	
uplicate (R411225-01)		R411225-04	7166-004	C		01/05/05	01/22/05	MWT	Carbon 14 in Solids	
16-T-28; 157.5ft-160ft	SOLID	11/20/04	7166-004	GAM		01/28/05	02/07/05	CSS	Gamma Scan	
	F03-025	11/24/04	7166-004	H		01/05/05	01/21/05	MWT	Tritium in Solids	
			7166-004	NI_L		12/25/04	12/30/04	MWT	Nickel 63 in Solids	
			7166-004	SR		12/20/04	12/29/04	MWT	Total Strontium in Solids	
			7166-004	TC		01/12/05	01/17/05	MWT	Technetium 99 in Solids	
			7166-004	TH		12/24/04	01/22/05	MWT	Thorium, Isotopic in Solids	

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SAMPLE DELIVERY GROUP H2856

WORK SUMMARY, cont.

SDG 7166
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2856

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAP No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	F03-025	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1	4
GAM	F03-025	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	F03-025	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	F03-025	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4
SR	F03-025	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TC	F03-025	Technetium 99 in Solids	TC99_TR_SEP_LSC	1			1	1	1	4
TH	F03-025	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4
TOTALS				7			7	7	7	28

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2856

R411225-03

Method Blank

METHOD BLANK

SDG <u>7166</u>	Client/Case no <u>Hanford</u>	SDG <u>H2856</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R411225-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7166-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-025</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.50	2.4	4.0	400	U	H
Carbon 14	14762-75-5	0.700	2.8	4.7	50	U	C
Nickel 63	13981-37-8	-0.405	1.8	3.0	30	U	NI_L
Total Strontium	SR-RAD	-0.003	0.11	0.11	1.0	U	SR
Technetium 99	14133-76-7	0.142	0.22	0.39	15	U	TC
Thorium 228	14274-82-9	0.040	0.16	0.31	1.0	U	TH
Thorium 230	14269-63-7	-0.080	0.16	0.31	1.0	U	TH
Thorium 232	TH-232	-0.040	0.080	0.31	1.0	U	TH
Potassium 40	13966-00-2	U		0.46		U	GAM
Cobalt 60	10198-40-0	U		0.046	0.050	U	GAM
Cesium 137	10045-97-3	U		0.041	0.10	U	GAM
Radium 226	13982-63-3	U		0.077	0.10	U	GAM
Radium 228	15262-20-1	U		0.17	0.20	U	GAM
Europium 152	14683-23-9	U		<u>0.11</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.14</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.065	0.10	U	GAM
Thorium 228	14274-82-9	U		0.049		U	GAM
Thorium 232	TH-232	U		0.17		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		4.8		U	GAM
Americium 241	14596-10-2	U		0.035		U	GAM

200-LW-1/LW-2 Characterization-Soil

QC-BLANK 51014

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/10/05</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

R411225-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7166</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H2856</u> Contract <u>No. 630</u>
Lab sample id <u>R411225-02</u> Dept sample id <u>7166-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>F03-025</u>

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	700	14	4.6	400	H	742	30	94	84-116	80-120	
Carbon 14	2230	45	11	50	C	2130	85	105	83-117	80-120	
Nickel 63	222	5.9	2.9	30	NI_L	226	9.0	98	84-116	80-120	
Total Strontium	11.2	0.61	0.26	1.0	SR	10.1	0.40	111	80-120	80-120	
Technetium 99	110	2.1	0.43	15	TC	109	4.4	101	83-117	80-120	
Thorium 230	39.5	4.1	0.29	1.0	TH	42.0	1.7	94	83-117	80-120	
Cobalt 60	1.19	0.065	0.035	0.050	GAM	1.17	0.047	102	75-125	80-120	
Cesium 137	1.23	0.057	0.044	0.10	GAM	1.14	0.046	108	74-126	80-120	

200-LW-1/LW-2 Characterization-Soil

QC-LCS 51013

Lab id EBRLNE
 Protocol Hanford
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 Form DVD-LCS
 Version 3.06
 Report date 02/10/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

R411225-04

B191B8

DUPLICATE

SDG <u>7166</u> Contact <u>Melissa C. Mannion</u> Duplicates Lab sample id <u>R411225-04</u> Dept sample id <u>7166-004</u> % solids <u>97.3</u>	ORIGINAL Lab sample id <u>R411225-01</u> Dept sample id <u>7166-001</u> Received <u>11/24/04</u> % solids <u>97.3</u>	Client/Case no <u>Hanford</u> SDG <u>H2856</u> Contract No. <u>630</u> Client sample id <u>B191B8</u> Location/Matrix <u>216-T-28; 157.5ft-160ft</u> <u>SOLID</u> Collected/Weight <u>11/20/04 10:15</u> <u>374.2 g</u> Custody/SAF No <u>F03-025-075</u> <u>F03-025</u>
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ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT LIMIT	PROT
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Tritium	11.4	2.2	2.9	400		H	13.4	2.6	3.5		16	46	
Carbon 14	-0.947	1.5	2.5	50	U	C	-0.474	1.7	3.0	U	-	-	
Nickel 63	-0.300	2.1	3.5	30	U	NI_L	-0.756	1.9	3.3	U	-	-	
Total Strontium	0.020	0.12	0.12	1.0	U	SR	-0.032	0.12	0.12	U	-	-	
Technetium 99	1.18	0.23	0.49	15		TC	1.22	0.29	0.38		3	51	
Thorium 228	0.468	0.29	0.28	1.0		TH	0.496	0.33	0.32		6	137	
Thorium 230	0.072	0.22	0.28	1.0	U	TH	0	0.17	0.32	U	-	-	
Thorium 232	0.719	0.36	0.28	1.0		TH	0.248	0.25	0.32	U	97	136	
Potassium 40	7.62	0.49	0.25			GAM	9.69	0.56	0.27		24	35	
Cobalt 60	U		0.026	0.050	U	GAM	U		0.026	U	-	-	
Cesium 137	U		0.023	0.10	U	GAM	U		0.028	U	-	-	
Radium 226	0.298	0.049	0.050	0.10		GAM	0.359	0.051	0.054		19	45	
Radium 228	0.460	0.11	0.11	0.20		GAM	0.501	0.098	0.099		9	56	
Europium 152	U		0.063	0.10	U	GAM	U		0.071	U	-	-	
Europium 154	U		0.072	0.10	U	GAM	U		0.085	U	-	-	
Europium 155	U		0.067	0.10	U	GAM	U		0.076	U	-	-	
Thorium 228	0.341	0.032	0.031			GAM	0.468	0.032	0.030		31	36	
Thorium 232	0.460	0.11	0.11			GAM	0.501	0.098	0.099		9	56	
Uranium 235	U		0.083		U	GAM	U		0.10	U	-	-	
Uranium 238	U		2.5		U	GAM	U		3.3	U	-	-	
Americium 241	U		0.11		U	GAM	U		0.12	U	-	-	

200-LW-1/LW-2 Characterization-Soil

QC-DUP#1 51015

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 02/10/05

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2856

R411225-01

B191B8

DATA SHEET

SDG <u>7166</u>	Client/Case no <u>Hanford</u>	SDG <u>H2856</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R411225-01</u>	Client sample id <u>B191B8</u>	
Dept sample id <u>7166-001</u>	Location/Matrix <u>216-T-28; 157.5ft-160ft</u>	<u>SOLID</u>
Received <u>11/24/04</u>	Collected/Weight <u>11/20/04 10:15</u>	<u>374.2 g</u>
% solids <u>97.3</u>	Custody/SAF No <u>F03-025-075</u>	<u>F03-025</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	13.4	2.6	3.5	400		H
Carbon 14	14762-75-5	-0.474	1.7	3.0	50	U	C
Nickel 63	13981-37-8	-0.756	1.9	3.3	30	U	NI_L
Total Strontium	SR-RAD	-0.032	0.12	0.12	1.0	U	SR
Technetium 99	14133-76-7	1.22	0.29	0.38	15		TC
Thorium 228	14274-82-9	0.496	0.33	0.32	1.0		TH
Thorium 230	14269-63-7	0	0.17	0.32	1.0	U	TH
Thorium 232	TH-232	0.248	0.25	0.32	1.0	U	TH
Potassium 40	13966-00-2	9.69	0.56	0.27			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	0.359	0.051	0.054	0.10		GAM
Radium 228	15262-20-1	0.501	0.098	0.099	0.20		GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.085	0.10	U	GAM
Europium 155	14391-16-3	U		0.076	0.10	U	GAM
Thorium 228	14274-82-9	0.468	0.032	0.030			GAM
Thorium 232	TH-232	0.501	0.098	0.099			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

200-LW-1/LW-2 Characterization-Soil

DATA SHEETS

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/10/05</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test TH Matrix SOLID
SDG 7166
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Thorium 230
reparation batch 7113-014					
191B8	R411225-01	7166-001			U
LK (QC ID-51014)	R411225-03	7166-003			U
CS (QC ID-51013)	R411225-02	7166-002			ok
uplicate (R411225-01)	R411225-04	7166-004			- U

nominal values and limits from method RDLs (pCi/g) 1.0
00-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX pCi/g	MDA g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- YZED	DETECTOR
reparation batch 7113-014 2σ prep error 5.0 % Reference Lab Notebook 7113 pg. 014																
191B8	R411225-01			0.32	0.250				73	173				34	12/24/04	12/24 SS-055
LK (QC ID-51014)	R411225-03			0.31	0.250				80	173					12/24/04	12/24 SS-058
CS (QC ID-51013)	R411225-02			0.29	0.250				84	173					12/24/04	12/24 SS-057
uplicate (R411225-01)	R411225-04			0.28	0.250				81	172				34	12/24/04	12/24 SS-059
	(QC ID-51015)															
nominal values and limits from method				1.0	0.250			20-105	150		180					

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
CP-060		Soil Preparation, rev 7
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 5
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>0.30</u> ± <u>0.037</u>
FOR 4 SAMPLES	YIELD	<u>80</u> ± <u>9</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Test SR Matrix SOLID
SDG 7166
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	PLANCHET	Total Strontium
reparation batch 7113-014				
191B8	R411225-01		7166-001	U
LK (QC ID=51014)	R411225-03		7166-003	U
CS (QC ID=51013)	R411225-02		7166-002	ok
uplicate (R411225-01)	R411225-04		7166-004	- U
ominal values and limits from method RDLs (pCi/g) 1.0				
00-LW-1/LW-2 Characterization-Soil				

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF COUNT %	FWHM min keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
reparation batch 7113-014 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 014														
191B8	R411225-01		0.12	1.00			94	953			30	12/20/04	12/20	GRB-201
LK (QC ID=51014)	R411225-03		0.11	1.00			88	953				12/20/04	12/20	GRB-203
CS (QC ID=51013)	R411225-02		0.26	1.00			81	100				12/20/04	12/20	GRB-221
uplicate (R411225-01)	R411225-04		0.12	1.00			92	953			30	12/20/04	12/20	GRB-204
(QC ID=51015)														
ominal values and limits from method			1.0	1.00			30-105	100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-060		Soil Preparation, rev 7
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 5
CP-381		Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA	0.15 ± 0.14
FOR 4 SAMPLES	YIELD	89 ± 11

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Test TC Matrix SOLID
 SDG 7166
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Planchet	Technetium 99
Preparation batch 7113-014					
191B8	R411225-01			7166-001	1.22
LK (QC ID=51014)	R411225-03			7166-003	U
CS (QC ID=51013)	R411225-02			7166-002	ok
uplicate (R411225-01)	R411225-04			7166-004	ok

Minimal values and limits from method RDLs (pCi/g) 15
 00-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF COUNT %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7113-014 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 014																
191B8	R411225-01			0.38	1.01			91	100				49	01/05/05	01/08	GRB-203
LK (QC ID=51014)	R411225-03			0.39	1.00			94	89					01/05/05	01/07	GRB-228
CS (QC ID=51013)	R411225-02			0.43	1.00			87	89					01/05/05	01/07	GRB-227
uplicate (R411225-01)	R411225-04			0.49	1.01			92	61					01/05/05	01/12	GRB-203
	(QC ID=51015)															

Minimal values and limits from method 15 1.00 20-105 50 180

PROCEDURES REFERENCE TC99_TR_SEP_LSC
 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 0.42 ± 0.10
 FOR 4 SAMPLES YIELD 91 ± 6

METHOD SUMMARIES

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
 SDG 7166
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
reparation batch 7113-014					
191B8	R411225-01		7166-001	U	U
LK (QC ID=51014)	R411225-03		7166-003	U	U
CS (QC ID=51013)	R411225-02		7166-002	ok	ok
uplicate (R411225-01)	R411225-04		7166-004	- U	- U
nominal values and limits from method		RDLs (pCi/g)		0.050	0.10
00-LW-1/LW-2 Characterization-Soil					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
reparation batch 7113-014		2σ prep error 15.0 %		Reference Lab Notebook 7113 pg. 014												
191B8	R411225-01		<u>0.23</u>	195						869			76	12/15/04	02/04	JR,05,00
LK (QC ID=51014)	R411225-03		<u>0.35</u>	195						394				12/15/04	01/10	JR,07,00
CS (QC ID=51013)	R411225-02		0.035	195						906				12/15/04	01/28	JR,03,00
uplicate (R411225-01)	R411225-04		<u>0.22</u>	195						942			69	12/15/04	01/28	JR,05,00
		(QC ID=51015)														
nominal values and limits from method		0.050		195					100			180				

PROCEDURES REFERENCE GAMMA_GS
 CP-060 Soil Preparation, rev 7
 CP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 0.21 ± 0.26
 FOR 4 SAMPLES YIELD _____ ± _____

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test C Matrix SOLID
SDG 7166
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Carbon 14
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Preparation batch 7113-014

191B8	R411225-01	7166-001			U
LK (QC ID=51014)	R411225-03	7166-003			U
CS (QC ID=51013)	R411225-02	7166-002			ok
uplicate (R411225-01)	R411225-04	7166-004			- U

Minimal values and limits from method RDLs (pCi/g) 50
30-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

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

Preparation batch 7113-014 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 014

191B8	R411225-01			3.0	0.467			100		50			46	01/03/05	01/05	LSC-004
LK (QC ID=51014)	R411225-03			4.7	0.300			100		50				01/03/05	01/05	LSC-004
CS (QC ID=51013)	R411225-02			11	0.300			100		<u>9</u>				01/03/05	01/05	LSC-004
uplicate (R411225-01)	R411225-04			2.5	0.546			100		50			46	01/03/05	01/05	LSC-004
	(QC ID=51015)															

Minimal values and limits from method 50 0.300 25 180

PROCEDURES REFERENCE C14_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 5.3 ± 7.8
FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

TRITIUM IN SOLIDS
LIQUID SCINTILLATION COUNTING

Test R Matrix SOLID
SDG 7166
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Tritium
reparation batch 7113-014				
191B8	R411225-01		7166-001	13.4
LK (QC ID=51014)	R411225-03		7166-003	U
CS (QC ID=51013)	R411225-02		7166-002	ok
uplicate (R411225-01)	R411225-04		7166-004	ok

nominal values and limits from method RDLs (pCi/g) 400
00-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ g	PREP PAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
reparation batch 7113-014 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 014																
191B8	R411225-01		3.5	0.467				100		50		46	01/03/05	01/05		LSC-004
LK (QC ID=51014)	R411225-03		4.0	0.400				100		50			01/03/05	01/05		LSC-004
CS (QC ID=51013)	R411225-02		4.6	0.400				100		50			01/03/05	01/05		LSC-004
uplicate (R411225-01)	R411225-04		2.9	0.546				100		50		46	01/03/05	01/05		LSC-004
	(QC ID=51015)															

nominal values and limits from method 400 0.400 25 180

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

AVERAGES ± 2 SD MDA 3.8 ± 1.4
FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2856

METHOD SUMMARY

NICKEL 63 IN SOLIDS
LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
SDG 7166
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2856

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	PLANCHET	Nickel 63
reparation batch 7113-014				
191B8	R411225-01		7166-001	U
LK (QC ID=51014)	R411225-03		7166-003	U
CS (QC ID=51013)	R411225-02		7166-002	ok
uplicate (R411225-01)	R411225-04		7166-004	- U

ominal values and limits from method RDLs (pCi/g) 30
00-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	MDA pCi/g	ALIQ g	PREP PAC	DILU- TION	YIELD %	EFF %	COUNT min	PWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR	
reparation batch 7113-014 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 014																
191B8	R411225-01		3.3	0.500			85		50			35	12/22/04	12/25	LSC-004	
LK (QC ID=51014)	R411225-03		3.0	0.500			90		50				12/22/04	12/25	LSC-004	
CS (QC ID=51013)	R411225-02		2.9	0.500			95		50				12/22/04	12/25	LSC-004	
uplicate (R411225-01)	R411225-04		3.5	0.500			79		50				35	12/22/04	12/25	LSC-004
	(QC ID=51015)															

ominal values and limits from method 30 0.500 30-105 25 180

PROCEDURES	REFERENCE	NI63_LSC
CP-061	Determination of Moisture Content in Solid Samples rev 3	
CP-060	Soil Preparation, rev 7	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5	
CP-280	Nickel-63 Purification, rev 3	

AVERAGES ± 2 SD	MDA <u>3.2</u> ± <u>0.55</u>
FOR 4 SAMPLES	YIELD <u>87</u> ± <u>14</u>

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2856

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG_H2856

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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SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2856

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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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2856

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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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2856

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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SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2856

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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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/10/05

00000028

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2856

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/10/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG_H2856

DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

Lab id EBRLNE
 Protocol Hanford
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 Version 3.06
 Report date 02/10/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2856

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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SUMMARY DATA SECTION

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Protocol Hanford
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Form DVD-RG
Version 3.06
Report date 02/10/05

0000003!

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG H2856

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

REPORT GUIDES

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Lab id EBRLNE

Protocol Hanford

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Report date 02/10/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2856

MATRIX SPIKE

for the recovery.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/10/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H2856

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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 Version Ver 1.0
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2856

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

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2856

SDG 7166
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2856

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 H2856

SDG 7166
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2856

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

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Lab id EBRLNE
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Form DVD-RG
Version 3.06
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COLLECTOR: Pope/Pfister/Wilberg/Tyra / *HUGGERS*
 COMPANY CONTACT: TRENT, STEVE
 TELEPHONE NO.: 373-5689
 PROJECT COORDINATOR: TRENT, SJ
 PRICE CODE: 8N
 DATA TURNAROUND: 45 Days / 45 Days

SAMPLING LOCATION: 216-T-28; 157.5ft-160ft
 PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil *H2856 (7166)*
 SAF NO.: F03-025
 AIR QUALITY:

ICE CHEST NO.: *GRP-04-004*
 FIELD LOGBOOK NO.: HNF-N-356 1
 COA: 119143ES10
 METHOD OF SHIPMENT: Federal Express

SHIPPED TO: Eberline Services
 OFFSITE PROPERTY NO.: *See PTR 14469*
 BILL OF LADING/AIR BILL NO.: *See PTR 14469*

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 N/A	PRESERVATION	Cool 4C	None																
		TYPE OF CONTAINER	gG	gG																
		NO. OF CONTAINER(S)	1	1																
		VOLUME	250ml	250ml																
SPECIAL HANDLING AND/OR STORAGE <i>N/A 11/20/04</i> <i>Radioactive Tie to: B19103</i>		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS																

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME															
B191B8	SOIL	<i>11-20-04</i>	<i>10:15</i>															

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	<i>11-20-04</i> (1) Chromium Hex - 7106; NO2/NO3 - 853.2; Sulphides - 9030; Oil & Grease - 413.1; (2) Nickel-63; Gamma Spec - Radium (Radium-226; Radium-228) Technetium-99; Isotopic Thorium (Thorium-232) Tritium - H3; Carbon-14; Strontium-89,90 -- Total Sr;	
<i>Kevin Nickles</i>	<i>11/20/04 13:00</i>	<i>Morgan Sitefiogeth</i>	<i>11/20/04 13:00</i>		
<i>Morgan Sitefiogeth</i>	<i>11/22/04 09:20</i>	<i>M.H. Damm</i>	<i>11/23/04 09:00</i>		
<i>M.H. Damm</i>	<i>11/23/04 09:00</i>	<i>Red Ex</i>	<i>11/24/04</i>		
<i>Red Ex</i>	<i>11/24/04 10:00</i>	<i>Andrew</i>	<i>10:45</i>		
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 Fluor Hanford City Richland State WA

Date/Time received 11/24/04 10:00 CoC No. F03-025-275

Container I.D. No. BRP04-004 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

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

14. Was P.M. notified of any anomalies? Yes [] No [] Date _____

15. Inspected by Dave Date: 11/24/04 Time: 10:45

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 _____

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-025 H2856

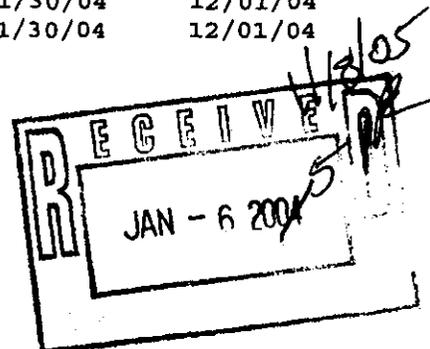
DATE RECEIVED: 11/24/04

LVL LOT # :0411L281

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B191B8						
% SOLIDS	001	S	04L&S195	11/20/04	11/28/04	11/29/04
% SOLIDS	001 REP	S	04L&S195	11/20/04	11/28/04	11/29/04
CHROMIUM VI	001	S	04LVI042	11/20/04	11/29/04	11/29/04
CHROMIUM VI	001 REP	S	04LVI042	11/20/04	11/29/04	11/29/04
CHROMIUM VI	001 MS	S	04LVI042	11/20/04	11/29/04	11/29/04
CHROMIUM VI	001 MSD	S	04LVI042	11/20/04	11/29/04	11/29/04
NITRATE NITRITE	001	S	04LN3B73	11/20/04	12/20/04	12/20/04
NITRATE NITRITE	001 REP	S	04LN3B73	11/20/04	12/20/04	12/20/04
NITRATE NITRITE	001 MS	S	04LN3B73	11/20/04	12/20/04	12/20/04
OIL & GREASE BY GRAV	001	S	04LOG040	11/20/04	12/03/04	12/05/04
OIL AND GREASE BY GR	001 REP	S	04LOG040	11/20/04	12/03/04	12/05/04
OIL AND GREASE BY GR	001 MS	S	04LOG040	11/20/04	12/03/04	12/05/04
SULFIDE	001	S	04LSD070	11/20/04	11/30/04	12/01/04
SULFIDE	001 REP	S	04LSD070	11/20/04	11/30/04	12/01/04
SULFIDE	001 MS	S	04LSD070	11/20/04	11/30/04	12/01/04

LAB QC:

CHROMIUM VI	MB1	S	04LVI042	N/A	11/29/04	11/29/04
CHROMIUM VI	MB1 BS	S	04LVI042	N/A	11/29/04	11/29/04
CHROMIUM VI	MB1 BSD	S	04LVI042	N/A	11/29/04	11/29/04
NITRATE NITRITE	MB1	S	04LN3B73	N/A	12/20/04	12/20/04
NITRATE NITRITE	MB1 BS	S	04LN3B73	N/A	12/20/04	12/20/04
OIL & GREASE BY GRAV	MB1	S	04LOG040	N/A	12/03/04	12/05/04
OIL AND GREASE BY GR	MB1 BS	S	04LOG040	N/A	12/03/04	12/05/04
OIL AND GREASE BY GR	MB1 BSD	S	04LOG040	N/A	12/03/04	12/05/04
SULFIDE	MB1	S	04LSD070	N/A	11/30/04	12/01/04
SULFIDE	MB1 BS	S	04LSD070	N/A	11/30/04	12/01/04
SULFIDE	MB1 BSD	S	04LSD070	N/A	11/30/04	12/01/04





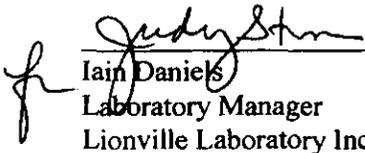
Analytical Report

Client: TNU-HANFORD F03-025 H2856
LVL#: 0411L281

W.O.#: 11343-606-001-9999-00
Date Received: 11-24-04

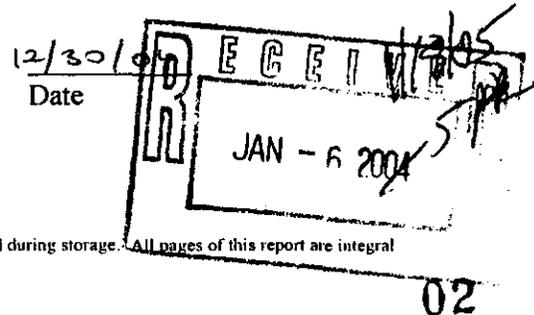
INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met with the exception of Sulfide.
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 for Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 75-125% control limits.
8. The replicate analyses Percent Solids and Sulfide were within the 20% RPD control limit however replicate analyses for Chromium VI, Nitrate Nitrite and Oil and Grease were outside the control limit that may be attributed to sample inhomogeneity.
9. Results for solid 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

njpl11-281

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 12 pages.



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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 (mod.)	✓ ^{EPA} 413.1 (mod.)
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: Nitrate Nitrite		Method: EPA 353.2 (mod.)	
Other:		Method	

JAN - 6 2004
 2005
 1/13/05 OC

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

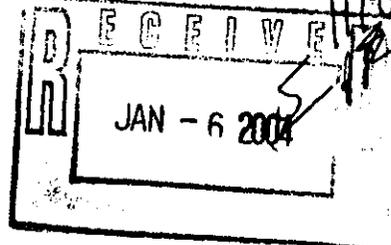
ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

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



Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/29/04

CLIENT: TNUHANFORD F03-025 H2856
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0411L281

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B191B8	% Solids	98.0	%	0.01	1.0
		Chromium VI	0.20	u MG/KG	0.20	1.0
		Nitrate Nitrite	30.5	MG/KG	2.0	10.0
		Oil & Grease Gravimetri	1030	MG/KG	680	1.0
		Sulfide	35.7	u MG/KG	35.7	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/29/04

CLIENT: TNUHANFORD F03-025 H2856
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0411L281

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
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BLANK10	04LVI042-MB1	Chromium VI	0.20	u MG/KG	0.20	1.0
BLANK10	04LN3B73-MB1	Nitrate Nitrite	0.20	u MG/KG	0.20	1.0
BLANK10	04LOG040-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0
BLANK10	04LSD070-MB1	Sulfide	40.0	u MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 12/29/04

CLIENT: TNUHANFORD F03-025 H2856
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0411L281

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B191B8	Soluble Chromium VI	4.0	0.20u	4.1	95.4	1.0
		Insoluble Chromium VI	1440	0.20u	1290	110.9	100
		Nitrate Nitrite	133	30.5	102	100	20.0
		Oil & Grease Gravimetr	9880	1030	7790	113.6	1.0
		Sulfide	480	7.2	525	89.9	1.0
BLANK10	04LVI042-MB1	Soluble Chromium VI	4.0	0.20u	4.0	99.0	1.0
		Insoluble Chromium VI	1220	0.20u	1110	110.1	100
BLANK10	04LN3B73-MB1	Nitrate Nitrite	5.1	0.20u	5.0	101.6	1.0
BLANK10	04LOG040-MB1	Oil & Grease Gravimetr	6920	667 u	7640	90.6	1.0
BLANK10	04LSD070-MB1	Sulfide	494	40.0 u	519	95.1	1.0
		Sulfide MSD	474	40.0 u	519	91.3	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 12/29/04

CLIENT: TNUHANFORD F03-025 H2856
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0411L281

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	04LSD070-MB1	Sulfide	95.1	91.3	4.1

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 12/29/04

CLIENT: TNUHANFORD F03-025 H2856
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0411L281

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	B191B8	% Solids	98.0	100	2.0	1.0
		Chromium VI	0.20u	0.27	NC	1.0
		Nitrate Nitrite	30.5	21.5	34.7	10.0
		Oil & Grease Gravimetri	1030	1470	35.1	1.0
		Sulfide	35.7 u	37.1 u	NC	1.0

COLLECTOR Pope/Pfister/Wilberg/Tyra / HUGHES		COMPANY CONTACT TRENT, STEVE	TELEPHONE NO. 373-5689	PROJECT COORDINATOR TRENT, SJ	PRICE CODE	SN	DATA TURNAROUND
SAMPLING LOCATION 216-T-28; 157.5ft-160ft		PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Soil		SAF NO. F03-025	AIR QUALITY <input type="checkbox"/>		45 Days / 45 Days

ICE CHEST NO. GRP-01-008	FIELD LOGBOOK NO. HNF-N-356 1	COA 119143E510	METHOD OF SHIPMENT Federal Express				
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SHIPPED TO MO-026 Beera	OFFSITE PROPERTY NO. See PTR 14470	BILL OF LADING/AIR BILL NO. See PTR 14470				
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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 N/A	PRESERVATION	Cool °C	None							
		TYPE OF CONTAINER	g	g							
		NO. OF CONTAINER(S)	1	1							
		VOLUME	250mL	250mL							
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie : B19103		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS							

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B191B8	SOIL	11-20-04	10:15	✓						

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM IND HUGHES	DATE/TIME 11/20/04 2:00	RECEIVED BY/STORED IN MO-026 Site Evid	DATE/TIME 11-20-04/13:00	(1)Chromium Hex - 7196; NO2/NO3 - 353.2; Sulfides - 9030; Oil & Grease - 413.1; (2)Nickel-63; Gamma Spec - Radium (Radium-226, Radium-228) Technetium-99; Isotope-Thorium (Thorium-232) Tritium - H3; Carbon-14; Strontium-89,90 -- Total See	
RELINQUISHED BY/REMOVED FROM MO-026	DATE/TIME 11/23/04 0930	RECEIVED BY/STORED IN M. H. ...	DATE/TIME 11/23/04 0930		
RELINQUISHED BY/REMOVED FROM M. H. ...	DATE/TIME 11/23/04 0930	RECEIVED BY/STORED IN Red EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FEJ Ed	DATE/TIME 11/24/04 0955	RECEIVED BY/STORED IN [Signature]	DATE/TIME 11/24/04 0955		
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: 11/24/04

Purchase Order / Project# /
 SAF# / SOW# / Release #: F03-025

LvLI Batch #: 04116281

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <u>Fed Ex</u> | Airbill# <u>7908 3886 0891</u> |
| 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 cooled or ambient? | Temp <u>2-5 °C</u> | Cooler # <u>GRP-04-008</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 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input 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 |