

SAF-B01-052
100 B/C Area Effluent Pipeline & Proximity Site
Remediation Activities - Quick Turn
FINAL DATA PACKAGE

FAX RESULTS TO:

Dave Shea 373-1395 N/A
INITIAL/DATE

Dean Strom 373-1395 N/A
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Dave Shea N/A
INITIAL/DATE

Phone or CC:Mail to Dean Strom N/A
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Dave Shea X3-40 DS 3/4/03
INITIAL/DATE

Dean Strom X3-40 DS 3/4/03
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG H2064 SAF-B01-052

Rad only Chem only X Rad & Chem

X Complete Partial

RECEIVED
MAY 13 2003

EDMC



EBERLINE
SERVICES

February 26, 2003

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

RECEIVED
FEB 2003

Reference: **P.O. #630**
Eberline Services R3-02-027-7441, SDG H2064

Dear Ms. Kessner:

Enclosed is the data report for one solid sample designated under SAF No. B01-052 received at Eberline Services on February 7, 2003. 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
Program Manager

MCM

Enclosure: Data Package

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

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2064 was composed of one solid (soil) sample designated under SAF No. B01-052 with a Project Designation of: 100 B/C Area Effluent Pipeline & Proximity Site Remediation.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on February 21, 2003.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analyses

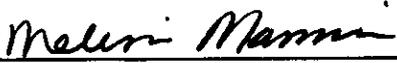
No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

The RPD between sample J00FM1 and its sample duplicate for K-40 was 70%, greater than the 3σ limit of 57%. No other 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
Program Manager

2/26/3

Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2064

SDG 7441
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H2064

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Meloni Mannion
Prepared by

Meloni Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 02/21/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2064

SDG 7441
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2064

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

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2064

SDG 7441
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG_H2064

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.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2064

SAMPLE SUMMARY

SDG 7441
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2064

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J00FM1	100 BC Pipeline 28/29	SOLID		R302027-01	B01-052	B01-052-135	01/31/03 10:52
Method Blank		SOLID		R302027-03	B01-052		
Lab Control Sample		SOLID		R302027-02	B01-052		
Duplicate (R302027-01)	100 BC Pipeline 28/29	SOLID		R302027-04	B01-052		01/31/03 10:52

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CS
 Version 3.06
 Report date 02/21/03

EBERLINE SERVICES/RICHMOND
 SAMPLE DELIVERY GROUP H2064

SDG 7441
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2064

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7441	B01-052-135	J00FM1	SOLID	91.9	1120 g		02/07/03 7	R302027-01		7441-001
		Method Blank	SOLID					R302027-03		7441-003
		Lab Control Sample	SOLID					R302027-02		7441-002
		Duplicate (R302027-01)	SOLID	91.9	1120 g		02/07/03 7	R302027-04		7441-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 02/21/03

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2064

SDG 7441
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2064

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS	
Alpha Spectroscopy									
AM	SOLID	Americium 241 in Soil	7043-092	5.0	1		1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	7043-092	5.0	1		1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	7043-092	5.0	1		1	1	1/1
Beta Counting									
SR	SOLID	Total Strontium in Soil	7043-092	10.0	1		1	1	1/1
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	7043-092	15.0	1		1	1	1/1

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/21/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2064

WORK SUMMARY

SDG 7441
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2064

CLIENT SAMPLE ID	LAB SAMPLE ID				SUF-					
LOCATION	MATRIX	COLLECTED		TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
CUSTODY	SAF No	RECEIVED	PLANCHET							
J00FM1		R302027-01	7441-001	AM		02/18/03	02/21/03	MCM	Americium 241 in Soil	
100 BC Pipeline 28/29	SOLID	01/31/03	7441-001	GAM		02/18/03	02/21/03	MCM	Gamma Scan	
B01-052-135	B01-052	02/07/03	7441-001	PU		02/18/03	02/21/03	MCM	Plutonium, Isotopic in Solids	
			7441-001	SR		02/19/03	02/21/03	MCM	Total Strontium in Soil	
			7441-001	U		02/18/03	02/21/03	MCM	Uranium, Isotopic in Soil	
Method Blank		R302027-03	7441-003	AM		02/18/03	02/21/03	MCM	Americium 241 in Soil	
	SOLID		7441-003	GAM		02/18/03	02/21/03	MCM	Gamma Scan	
	B01-052		7441-003	PU		02/18/03	02/21/03	MCM	Plutonium, Isotopic in Solids	
			7441-003	SR		02/19/03	02/21/03	MCM	Total Strontium in Soil	
			7441-003	U		02/13/03	02/21/03	MCM	Uranium, Isotopic in Soil	
Lab Control Sample		R302027-02	7441-002	AM		02/18/03	02/21/03	MCM	Americium 241 in Soil	
	SOLID		7441-002	GAM		02/18/03	02/21/03	MCM	Gamma Scan	
	B01-052		7441-002	PU		02/18/03	02/21/03	MCM	Plutonium, Isotopic in Solids	
			7441-002	SR		02/19/03	02/21/03	MCM	Total Strontium in Soil	
			7441-002	U		02/13/03	02/21/03	MCM	Uranium, Isotopic in Soil	
Duplicate (R302027-01)		R302027-04	7441-004	AM		02/18/03	02/21/03	MCM	Americium 241 in Soil	
100 BC Pipeline 28/29	SOLID	01/31/03	7441-004	GAM		02/19/03	02/21/03	MCM	Gamma Scan	
	B01-052	02/07/03	7441-004	PU		02/18/03	02/21/03	MCM	Plutonium, Isotopic in Solids	
			7441-004	SR		02/19/03	02/21/03	MCM	Total Strontium in Soil	
			7441-004	U		02/13/03	02/21/03	MCM	Uranium, Isotopic in Soil	

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-052	Americium 241 in Soil	AMCISO_IE_PLATE_AEA	1			1	1	1		4
GAM	B01-052	Gamma Scan	GAMMA_GS	1			1	1	1		4
PU	B01-052	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
SR	B01-052	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
U	B01-052	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	1			1	1	1		4
TOTALS				5			5	5	5		20

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/21/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2064

R302027-03

Method Blank

METHOD BLANK

SDG <u>7441</u>	Client/Case no <u>Hanford</u>	<u>SDG H2064</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R302027-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7441-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B01-052</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Total Strontium	SR-RAD	-0.031	0.14	0.20	1.0	U	SR
Uranium 233/234	U-233/234	0	0.055	0.21	1.0	U	U
Uranium 235	15117-96-1	0	0.066	0.25	1.0	U	U
Uranium 238	U-238	0	0.055	0.21	1.0	U	U
Plutonium 238	13981-16-3	-0.068	0.14	0.37	1.0	U	PU
Plutonium 239/240	PU-239/240	0.034	0.068	0.26	1.0	U	PU
Americium 241	14596-10-2	0	0.064	0.24	1.0	U	AM
Potassium 40	13966-00-2	U		1.3		U	GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Cesium 137	10045-97-3	U		0.064	0.10	U	GAM
Radium 226	13982-63-3	U		0.25		U	GAM
Radium 228	15262-20-1	U		0.31		U	GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	U		0.090		U	GAM
Thorium 232	TH-232	U		0.31		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		8.4		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM

100 B/C Area Effluent Pipe. & Prox.

QC-BLANK 43844

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2064

R302027-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7441</u>	Client/Case no <u>Hanford</u>	SDG <u>H2064</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R302027-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7441-002</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B01-052</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	22.9	0.56	0.18	1.0	SR		21.2	0.85	108	82-118	80-120
Uranium 233/234	17.4	1.9	0.95	1.0	U		18.6	0.74	94	82-118	80-120
Uranium 235	15.2	1.7	0.24	1.0	U		15.1	0.60	101	81-119	80-120
Uranium 238	20.3	2.1	0.91	1.0	U		20.2	0.81	100	82-118	80-120
Plutonium 238	22.0	2.2	0.25	1.0	PU		24.4	0.98	90	84-116	80-120
Plutonium 239/240	23.5	2.3	0.20	1.0	PU		26.4	1.1	89	84-116	80-120
Americium 241	19.5	2.2	0.24	1.0	AM		19.0	0.76	103	80-120	80-120
Cobalt 60	5.05	0.28	<u>0.12</u>	0.050	GAM		5.08	0.20	99	75-125	80-120
Cesium 137	5.04	0.23	<u>0.14</u>	0.10	GAM		4.81	0.19	105	75-125	80-120

100 B/C Area Effluent Pipe. & Prox.

QC-LCS 43843

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>02/21/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2064

R302027-04

J00FM1

DUPLICATE

SDG <u>7441</u>	Client/Case no <u>Hanford</u>	SDG <u>H2064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R302027-04</u>	Lab sample id <u>R302027-01</u>	Client sample id <u>J00FM1</u>
Dept sample id <u>7441-004</u>	Dept sample id <u>7441-001</u>	Location/Matrix <u>100 BC Pipeline 28/29</u> <u>SOLID</u>
	Received <u>02/07/03</u>	Collected/Weight <u>01/31/03 10:52</u> <u>1120 g</u>
% solids <u>91.9</u>	% solids <u>91.9</u>	Custody/SAF No <u>B01-052-135</u> <u>B01-052</u>

ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Total Strontium	8.94	0.57	0.27	1.0		SR	8.98	0.44	0.26		0	24	
Uranium 233/234	0.941	0.36	0.22	1.0		U	0.892	0.31	0.20		5	78	
Uranium 235	0	0.071	0.27	1.0	U	U	0.031	0.062	0.24	U	-	-	
Uranium 238	0.852	0.30	0.22	1.0		U	0.765	0.26	0.20		11	74	
Plutonium 238	0.512	0.26	0.31	1.0		PU	0.427	0.26	0.31		18	118	
Plutonium 239/240	8.57	1.2	0.24	1.0		PU	8.96	1.3	0.25		4	32	
Americium 241	3.49	0.76	0.27	1.0		AM	3.76	0.77	0.25		7	46	
Potassium 40	9.83	2.7	2.1			GAM	20.4	3.8	2.2		<u>70</u>	57	
Cobalt 60	17.1	0.78	<u>0.52</u>	0.050		GAM	17.9	0.51	<u>0.31</u>		5	33	
Cesium 137	489	2.7	<u>1.3</u>	0.10		GAM	493	1.8	<u>0.74</u>		1	32	
Radium 226	U		1.6		U	GAM	U		0.90	U	-	-	
Radium 228	U		3.1		U	GAM	U		1.9	U	-	-	
Europium 152	224	3.6	<u>3.6</u>	0.10		GAM	231	2.4	<u>2.3</u>		3	32	
Europium 154	25.8	2.1	<u>2.0</u>	0.10		GAM	25.0	1.3	<u>1.1</u>		3	35	
Europium 155	U		<u>2.3</u>	0.10	U	GAM	U		<u>1.3</u>	U	-	-	
Thorium 228	U		33		U	GAM	U		1.2	U	-	-	
Thorium 232	U		3.1		U	GAM	U		1.9	U	-	-	
Uranium 235	U		3.4		U	GAM	U		1.9	U	-	-	
Uranium 238	U		97		U	GAM	U		69	U	-	-	
Americium 241	U		2.0		U	GAM	U		1.9	U	-	-	

100 B/C Area Effluent Pipe. & Prox.

QC-DUP#1 43845

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/21/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2064

R302027-01

J00FM1

DATA SHEET

SDG <u>7441</u>	Client/Case no <u>Hanford</u>	SDG <u>H2064</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R302027-01</u>	Client sample id <u>J00FM1</u>	
Dept sample id <u>7441-001</u>	Location/Matrix <u>100 BC Pipeline 28/29</u>	<u>SOLID</u>
Received <u>02/07/03</u>	Collected/Weight <u>01/31/03 10:52</u>	<u>1120 g</u>
% solids <u>91.9</u>	Custody/SAF No <u>B01-052-135</u>	<u>B01-052</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	8.98	0.44	0.26	1.0		SR
Uranium 233/234	U-233/234	0.892	0.31	0.20	1.0		U
Uranium 235	15117-96-1	0.031	0.062	0.24	1.0	U	U
Uranium 238	U-238	0.765	0.26	0.20	1.0		U
Plutonium 238	13981-16-3	0.427	0.26	0.31	1.0		PU
Plutonium 239/240	PU-239/240	8.96	1.3	0.25	1.0		PU
Americium 241	14596-10-2	3.76	0.77	0.25	1.0		AM
Potassium 40	13966-00-2	20.4	3.8	2.2			GAM
Cobalt 60	10198-40-0	17.9	0.51	<u>0.31</u>	0.050		GAM
Cesium 137	10045-97-3	493	1.8	<u>0.74</u>	0.10		GAM
Radium 226	13982-63-3	U		0.90		U	GAM
Radium 228	15262-20-1	U		1.9		U	GAM
Europium 152	14683-23-9	231	2.4	<u>2.3</u>	0.10		GAM
Europium 154	15585-10-1	25.0	1.3	<u>1.1</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>1.3</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		1.2		U	GAM
Thorium 232	TH-232	U		1.9		U	GAM
Uranium 235	15117-96-1	U		1.9		U	GAM
Uranium 238	U-238	U		69		U	GAM
Americium 241	14596-10-2	U		1.9		U	GAM

100 B/C Area Effluent Pipe. & Prox.

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>02/21/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2064

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7441
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 7043-092					
J00FM1	R302027-01	7441-001			3.76
BLK (QC ID=43844)	R302027-03	7441-003			U
LCS (QC ID=43843)	R302027-02	7441-002			ok
Duplicate (R302027-01)	R302027-04	7441-004			ok

Nominal values and limits from method RDLs (pCi/g) 1.0
100 B/C Area Effluent Pipe. & Prox.

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- YZED	DETECTOR
Preparation batch 7043-092 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 092															
J00FM1	R302027-01			0.25	0.500			74		110			18	02/18/03	SS-005
BLK (QC ID=43844)	R302027-03			0.24	0.500			76		111			18	02/18/03	SS-011
LCS (QC ID=43843)	R302027-02			0.24	0.500			73		111			18	02/18/03	SS-010
Duplicate (R302027-01)	R302027-04			0.27	0.500			67		111			18	02/18/03	SS-016
	(QC ID=43845)														

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	0.25 ± 0.028
FOR 4 SAMPLES	YIELD	72 ± 8

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SAMPLE DELIVERY GROUP H2064

Test PU Matrix SOLID
 SDG 7441
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2064

METHOD SUMMARY
 PLUTONIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 7043-092						
J00FM1	R302027-01			7441-001	0.427	8.96
BLK (QC ID=43844)	R302027-03			7441-003	U	U
LCS (QC ID=43843)	R302027-02			7441-002	ok	ok
Duplicate (R302027-01)	R302027-04			7441-004	ok	ok

Nominal values and limits from method RDLs (pCi/g) 1.0 1.0
 100 B/C Area Effluent Pipe. & Prox.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7043-092 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 092															
J00FM1	R302027-01			0.31	0.500			75		112			18	02/18/03	SS-031
BLK (QC ID=43844)	R302027-03			0.37	0.500			68		112				02/18/03	SS-039
LCS (QC ID=43843)	R302027-02			0.25	0.500			93		112				02/18/03	SS-032
Duplicate (R302027-01)	R302027-04			0.31	0.500			72		112			18	02/18/03	SS-040
															(QC ID=43845)

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-941		Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA <u>0.31</u> ± <u>0.098</u>
FOR 4 SAMPLES	YIELD <u>77</u> ± <u>22</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2064

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7441
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)						
					233/234	235	238	1+3	2σ	2+3	2σ			
Preparation batch 7043-092														
J00FM1	R302027-01			7441-001	0.892	U	0.765	117	57	4	8			
BLK (QC ID=43844)	R302027-03			7441-003	U	U	U							
LCS (QC ID=43843)	R302027-02			7441-002	ok	ok	ok							
Duplicate (R302027-01)	R302027-04			7441-004	ok	- U	ok	110	57	0	8			
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4				
100 B/C Area Effluent Pipe. & Prox.								Averages 114		2				

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF COUNT %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	DETECTOR
Preparation batch 7043-092 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 092															
J00FM1	R302027-01			0.24	0.500			93		110			18	02/13/03	02/18 SS-006
BLK (QC ID=43844)	R302027-03			0.25	0.500			85		112				02/13/03	02/13 SS-006
LCS (QC ID=43843)	R302027-02			0.95	0.500			92		112				02/13/03	02/13 SS-005
Duplicate (R302027-01)	R302027-04			0.27	0.500			80		112			13	02/13/03	02/13 SS-008
	(QC ID=43845)														
Nominal values and limits from method				1.0	0.500			20-105		100	100		180		

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-920	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA <u>0.43</u> ± <u>0.70</u>
FOR 4 SAMPLES	YIELD <u>88</u> ± <u>12</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2064

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
 SDG 7441
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 7043-092					
J00FM1	R302027-01			7441-001	8.98
BLK (QC ID=43844)	R302027-03			7441-003	U
LCS (QC ID=43843)	R302027-02			7441-002	ok
Duplicate (R302027-01)	R302027-04			7441-004	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
100 B/C Area Effluent Pipe. & Prox.					

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 7043-092 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 092																
J00FM1	R302027-01			0.26	1.00			61		400			19	02/19/03	02/19	GRB-202
BLK (QC ID=43844)	R302027-03			0.20	1.00			83		400				02/19/03	02/19	GRB-204
LCS (QC ID=43843)	R302027-02			0.18	1.00			84		400				02/19/03	02/19	GRB-203
Duplicate (R302027-01)	R302027-04			0.27	1.00			93		100			19	02/19/03	02/19	GRB-207
				(QC ID=43845)												
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-381		Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA	<u>0.23</u>	±	<u>0.089</u>
FOR 4 SAMPLES	YIELD	<u>80</u>	±	<u>27</u>

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METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7441
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7043-092						
J00FM1	R302027-01			7441-001	17.9	493
BLK (QC ID=43844)	R302027-03			7441-003	U	U
LCS (QC ID=43843)	R302027-02			7441-002	ok	ok
Duplicate (R302027-01)	R302027-04			7441-004	ok	ok

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
100 B/C Area Effluent Pipe. & Prox.

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 7043-092 2σ prep error 15.0 % Reference Lab Notebook 7043 pg. 092																
J00FM1	R302027-01			<u>4.8</u>	194					124			18	02/14/03	02/18	JR,07,00
BLK (QC ID=43844)	R302027-03			<u>0.57</u>	194					110				02/14/03	02/18	JR,03,00
LCS (QC ID=43843)	R302027-02			<u>0.12</u>	194					126				02/14/03	02/18	JR,05,00
Duplicate (R302027-01)	R302027-04			<u>8.5</u>	194					116			19	02/14/03	02/19	JR,03,00
																(QC ID=43845)

Nominal values and limits from method 0.050 194 100 180

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 4
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD	MDA <u>3.5</u> ± <u>7.9</u>
FOR 4 SAMPLES	YIELD _____ ± _____

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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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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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WORK SUMMARY

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

The following notes apply to this report:

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

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DATA SHEET

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

The following notes apply to this report:

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

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

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

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

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

 For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

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DATA SHEET

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

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REPORT GUIDE

LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

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

1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2064

SDG 7441
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG_H2064

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

SAMPLE DELIVERY GROUP H2064

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 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2064

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

Page 13

SUMMARY DATA SECTION

Page 28

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

SAMPLE DELIVERY GROUP H2064

SDG 7441
 Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
 Contract No. 630
 Case no SDG_H2064

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

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 02/21/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2064

SDG 7441
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG_H2064

METHOD SUMMARY

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

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

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

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

Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/03

7491

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B01-052-135	Page 1 of 1
Collector D. Shea	Company Contact Dave Shea	Telephone No. 373-6425	Project Coordinator KESSNER, JH		Price Code 8K	Data Turnaround	
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location 100 BC pipeline 28/29	H2064 (7441)		SAF No. B01-052	Air Quality <input type="checkbox"/> 15 days	
Ice Chest No. ERC 99 010	Field Logbook No. EL-1548-3	COA R100BC2600		Method of Shipment FED EX			
Shipped To TMA/RECRA		Offsite Property No. A030147	Bill of Lading/Air Bill No. SEE OSPC				

POSSIBLE SAMPLE HAZARDS/REMARKS <i>Potentially radiologically contaminated</i> Special Handling and/or Storage	Preservation	Cool 4C	Cool 4C	None	None						
	Type of Container	G/P	G	G/P	G						
	No. of Container(s)	1		1	1						
	Volume	60mL	60mL	500mL	60mL						
SAMPLE ANALYSIS		ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.						
		Sample No.	Matrix *	Sample Date	Sample Time						
J00FM1	SOIL	1/31/03	1052	✓	✓	✓	✓				

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drym Solids DL=Drunl Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
DWShea DWShea		1/31/03 1412		100BC sample/DMSA		1/31/03 1412		
100BC sample/DMSA		1/31/03 1630		DWShea DWShea		1/31/03 1630		
DWShea DWShea		1/31/02 1727		Fridge IA		1/31/02 1727		
REFIA		2603 1300		S JGALE/Dal		2603 1300		
S JGALE/Dal		2603 1300		FED EX				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
Lee C Jhn		2-7-03 1000						
LABORATORY SECTION				Personnel not available to relinquish samples from the 3728 Ref # IA on 2/6/03				
Received By		Title		Date/Time				
Disposal Method		Disposed By		Date/Time				

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BKI Date/Time received 1000 2-7-03
 CoC No. B01-052
 Container I.D. No. ERC 99-010 Requested TAT (Days) 15 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
5. Cooler Temperature: _____ Packing material is: Wet [] Dry []
6. Number of samples in shipping container: 1
7. Number of containers per sample: 2 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [] No []
9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
14. Received by [Signature] Date: 2-7-03 Time: 1000

Customer Sample No.	cpm	mr/hr
<u>J00FM</u>	<u>130</u>	<u>.032</u>

Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____



20 February 2003

Joan Kessner
Bechtel-Hanford, Inc.
3190 Washington Way
MSIN H9-03
Richland, WA 99352

**Subject: Contract No. 630
Analytical Data Package**

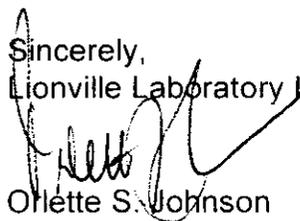
Dear Ms. Kessner:

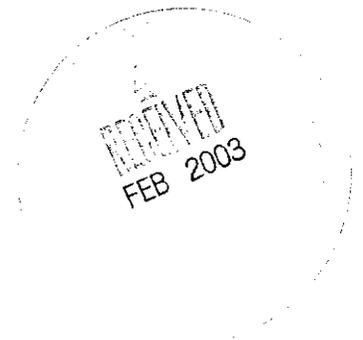
Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0302L696
SDG #	H2064
SAF #	B01-052
Date Received	2-8-03
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO	
GRO	
Metals	X
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated


Orlette S. Johnson
Project Manager



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

FEB 2003

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-052 H2064

DATE RECEIVED: 02/08/03

LVL LOT # :0302L696

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00FM1						
CHROMIUM, TOTAL	001	S	03L0084	01/31/03	02/18/03	02/18/03
CHROMIUM, TOTAL	001 REP	S	03L0084	01/31/03	02/18/03	02/18/03
CHROMIUM, TOTAL	001 MS	S	03L0084	01/31/03	02/18/03	02/18/03
MERCURY, TOTAL	001	S	03C0028	01/31/03	02/12/03	02/13/03
MERCURY, TOTAL	001 REP	S	03C0028	01/31/03	02/12/03	02/13/03
MERCURY, TOTAL	001 MS	S	03C0028	01/31/03	02/12/03	02/13/03
LEAD, TOTAL	001	S	03L0084	01/31/03	02/18/03	02/18/03
LEAD, TOTAL	001 REP	S	03L0084	01/31/03	02/18/03	02/18/03
LEAD, TOTAL	001 MS	S	03L0084	01/31/03	02/18/03	02/18/03

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	03L0084	N/A	02/18/03	02/18/03
CHROMIUM, TOTAL	MB1	S	03L0084	N/A	02/18/03	02/18/03
MERCURY LABORATORY	LC1 BS	S	03C0028	N/A	02/12/03	02/13/03
MERCURY, TOTAL	MB1	S	03C0028	N/A	02/12/03	02/13/03
LEAD LABORATORY	LC1 BS	S	03L0084	N/A	02/18/03	02/18/03
LEAD, TOTAL	MB1	S	03L0084	N/A	02/18/03	02/18/03



Analytical Report

Client: TNU-HANFORD B01-052
LVL#: 0302L696
SDG/SAF#: H2064/B01-052

W.O.#: 11343-606-001-9999-00
Date Received: 02-08-03

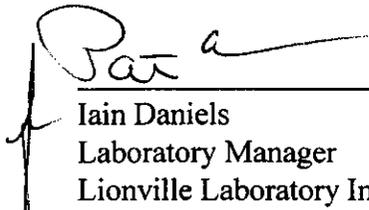
METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J00FM1	Chromium	200	104.3

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



 Iain Daniels
 Laboratory Manager
 Lionville Laboratory Incorporated
 gmb/m02-696

02-20-03
 Date

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

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

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/20/03

CLIENT: TNUHANFORD B01-052 H2064
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00FM1	Chromium, Total	74.3	MG/KG	0.06	1.0
		Mercury, Total	1.6	MG/KG	0.02	1.0
		Lead, Total	17.0	MG/KG	0.26	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/20/03

CLIENT: TNUHANFORD B01-052 H2064
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0084-MB1	Chromium, Total	0.13	MG/KG	0.06	1.0
		Lead, Total	0.37	MG/KG	0.26	1.0
BLANK1	03C0028-MB1	Mercury, Total	0.02	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/20/03

CLIENT: TNUHANFORD B01-052 H2064
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-001	J00FM1	Chromium, Total	79.0	74.3	19.5	24.1	1.0
		Mercury, Total	2.2	1.6	0.16	383.0*	3.0
		Lead, Total	58.4	17.0	48.9	84.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/20/03

CLIENT: TNUHANFORD B01-052 H2064
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	J00FM1	Chromium, Total	74.3	72.9	1.9	1.0
		Mercury, Total	1.6	1.3	18.1	1.0
		Lead, Total	17.0	15.6	8.6	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/20/03

CLIENT: TNUHANFORD B01-052 H2064

LVL LOT #: 0302L696

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
-----	-----	-----	-----	-----	-----	-----
LCS1	03L0084-LC1	Chromium, LCS	51.1	50.0	MG/KG	102.2
		Lead, LCS	247	250	MG/KG	98.6
LCS1	03C0028-LC1	Mercury, LCS	2.2	2.5	MG/KG	88.2

Collector D. Shea	Company Contact Dave Shea	Telephone No. 373-6425	Project Coordinator KESSNER, JH	Price Code	Data Turnaround
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation	Sampling Location 100 BC pipeline 28/29	SAF No. B01-052	Air Quality 15 days		
Ice Chest No. ERC 02-508	Field Logbook No. EL-1548-3	COA R100BC2600	Method of Shipment FED EX		
Shipped To TMA/RECRA	Offsite Property No. A030128	Bill of Lading/Air Bill No. SEE OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially radiologically contaminated	Special Handling and/or Storage	Preservation	Cool 4C	Cool 4C	None	None
		Type of Container	G/P	G	G/P	G
		No. of Container(s)	1	1	1	1
		Volume	60mL	60mL	500mL	60mL

SAMPLE ANALYSIS	ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CY)	Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time							
J00FM1	SOIL	1/31/03	1052	✓	✓	✓	✓			

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From Dusker Dusker 1/31/03 1412	Received By/Stored In 1003C sample/DMSA 1/31/03 1412
Relinquished By/Removed From 1003C sample/DMSA 1/31/03 1630	Received By/Stored In Dusker Dusker 1/31/03 1630
Relinquished By/Removed From Dusker Dusker 1/31/03 1727	Received By/Stored In Fridge IA 1/31/03 1727
Relinquished By/Removed From REF IA 2603 1300	Received By/Stored In S J GALE/MSA 2603
Relinquished By/Removed From S J GALE/MSA 2603 1300	Received By/Stored In FED EX
Relinquished By/Removed From Dusker 2/18/03 1140	Received By/Stored In Dusker 2/18/03 1140

SPECIAL INSTRUCTIONS	Matrix *
(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) DWS 1/29/03 (2) Isotopic Uranium; Americium-241; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Nickel-63	S=Soil SE=Sediment SO=Solid SI=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other
Personnel not available to relinquish samples from the 3728 Ref # IA on 2/16/03	

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

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: *HANFORD*

Purchase Order/Project:

DATE: *2-8-03*

AF# / SOW# / Release #: *B01-052*

Laboratory SDG #: *0302L696*

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. 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 | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

-02-508 4°

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

FEB 2003

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-052 H2064

DATE RECEIVED: 02/08/03

LVL LOT # :0302L696

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00FM1						
% SOLIDS	001	S	03L%S015	01/31/03	02/10/03	02/11/03
% SOLIDS	001 REP	S	03L%S015	01/31/03	02/10/03	02/11/03
CHROMIUM VI	001	S	03LVI010	01/31/03	02/11/03	02/11/03
CHROMIUM VI	001 REP	S	03LVI010	01/31/03	02/11/03	02/11/03
CHROMIUM VI	001 MS	S	03LVI010	01/31/03	02/11/03	02/11/03
CHROMIUM VI	001 MSD	S	03LVI010	01/31/03	02/11/03	02/11/03

LAB QC:

CHROMIUM VI	MB1	S	03LVI010	N/A	02/11/03	02/11/03
CHROMIUM VI	MB1 BS	S	03LVI010	N/A	02/11/03	02/11/03
CHROMIUM VI	MB1 BSD	S	03LVI010	N/A	02/11/03	02/11/03



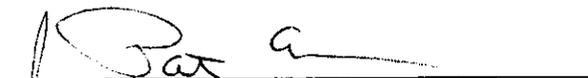
Analytical Report

Client: TNU-HANFORD B01-052 H2064
LVL#: 0302L696

W.O.#: 11343-606-001-9999-00
Date Received: 02-08-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.
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 blank for Chromium VI was within the method criteria.
6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
8. The replicate analyses for Percent Solids and Chromium VI were within the 20% Relative Percent Difference (RPD) control limit.
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

njpl02-696

02-14-03
Date

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

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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 02/12/03

CLIENT: TNU-HANFORD B01-052 H2064

LVL LOT #: 0302L696

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00FM1	% Solids	92.2	%	0.01	1.0
		Chromium VI	3.9	MG/KG	0.43	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/12/03

CLIENT: TNU-HANFORD B01-052 H2064
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK10	03LVI010-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/12/03

CLIENT: TNU-HANFORD B01-052 H2064
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J00FM1	Soluble Chromium VI	9.2	3.9	4.3	123.9	1.0
		Insoluble Chromium VI	1200	3.9	1260	95.2	100
BLANK10	03LVI010-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.2	1.0
		Insoluble Chromium VI	1310	0.40u	1240	105.2	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/12/03

CLIENT: TNU-HANFORD B01-052 H2064
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0302L696

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	J00FM1	‡ Solids	92.2	89.8	2.7	1.0
		Chromium VI	3.9	4.1	6.0	1.0

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				BUI-032-133			
Collector D. Shea		Company Contact Dave Shea		Telephone No. 373-6425		Project Coordinator KESSNER, JH	Price Code	Data Turnaround	
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location 100 BC pipeline 28/29		SAF No. B01-052		Air Quality 11 15 days			
Ice Chest No. ERC 02-508		Field Logbook No. EL-1548-3		COA R100BC2600		Method of Shipment FED EX			
Shipped To TMA/RECRA		Offsite Property No. A030128				Bill of Lading/Air Bill No. SEE OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially radiologically contaminated				Preservation	Cool 4C	Cool 4C	None	None	
Special Handling and/or Storage				Type of Container	G/P	G	G/P	G	
				No. of Container(s)	1	1	1	1	
				Volume	60mL	60mL	500mL	60mL	
SAMPLE ANALYSIS				ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
J00FM1	SOIL	1/31/03	1052	✓	✓	✓	✓		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) DWS 1/29/03 (2) Isotopic Uranium; Americium-241; Isotopic Plutonium; Strontium-89,90 - Total Sr; Nickel-63	S=Soil SE=Sediment SO=Solid SI=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wt=Wipe L=Liquid V=Vegetation X=Other
DWShea DWShea		1/31/02 1412		100BC Sample/DMSA		1/31/02 1412			
WDBL Sample/DMSA		1/31/02 1630		DWShea DWShea		1/31/02 1630			
DWShea DWShea		1/31/02 1727		Fridge 1A		1/31/02 1727			
REF 1A		2/6/03 1300		S.J. GALE		2/6/03 1300			
S.J. GALE		2/6/03 1300		FED EX				Personnel not available to relinquish samples from the 3728 Ref # 1A on 2/16/03	
FED EX		2/18/03 1140		Kurti King		2/18/03 1140			
LABORATORY SECTION	Received By		Title				Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method					Disposed By	Date/Time		

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: HANFORD
 Purchase Order/Project:

DATE: 2-8-03

AF# / SOW# / Release #: B01-052

Laboratory SDG #: 0302L696

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. 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 | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

3-02-508 4°

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager: