RECEIVED NOVEMBER 20, 2009

EBERLINE SERVICES

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November 20, 2009

Mr. Michael Neely
CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – B6-06
Richland, WA 99352

Reference: **P.O. #33677**
Eberline Analytical R9-11-053-7708, SDG H4074

Dear Mr. Neely:

Enclosed is a data report for two solid (soil) samples designated under SAF No. F09-047 received at Eberline Analytical on November 13, 2009. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville
Client Services Manager

NJV/jljb

Enclosure: Case Narrative

1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4074 was composed of two solid (soil) samples designated under SAF No. F09-047 with a Project Designation of: ARRA BC Controlled Area Remediation - In Process Soil Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Strontium-90 Analysis

The QC Blank MDA was greater than the RDL of 1.0 pCi/g. Sample B22CN2 MDA was greater than the RDL of 1.0 pCi/g, however the sample activities were much greater than the respective sample MDA. No other problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.3 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.4 Gamma Spectroscopy Analysis

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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

N. Joseph Verville
Client Services Manager

11/20/09
Date

SDG 7708
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG_H4074

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

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Prepared by

Reviewed by

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 11/20/09

SDG 7708
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4074

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.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/20/09

SDG 7708
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC
Contract No. 33677
Case no SDG_H4074

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 ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

LAB SAMPLE SUMMARY

SDG 7708
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG H4074

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R911053-01	B22CN2	ZA-L3-01	SOLID		F09-047	F09-047-006	10/23/09 09:05
R911053-02	B22CK9	ZA-L1-01	SOLID		F09-047	F09-047-010	10/16/09 10:10
R911053-03	Lab Control Sample		SOLID		F09-047		
R911053-04	Method Blank		SOLID		F09-047		
R911053-05	Duplicate (R911053-01)	ZA-L3-01	SOLID		F09-047		10/23/09 09:05

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

SDG 7708
Contact N. Joseph Verville

QC SUMMARY

Client CHPRC
Contract No. 33677
Case no SDG H4074

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7708	F09-047-006	B22CN2	SOLID	94.3	639 g		11/13/09	21	R911053-01	7708-001
	F09-047-010	B22CK9	SOLID	93.8	686 g		11/13/09	28	R911053-02	7708-002
		Method Blank	SOLID						R911053-04	7708-004
		Lab Control Sample	SOLID						R911053-03	7708-003
		Duplicate (R911053-01)	SOLID	94.3	639 g		11/13/09	21	R911053-05	7708-005

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

SDG 7708
Contact N. Joseph Verville

PREP BATCH SUMMARY

Client CHPRC
Contract No. 33677
Case no SDG H4074

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Solids	7215-142	8.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7215-142	8.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7215-142	10.4	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7215-142	7.0	2			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.

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

LAB WORK SUMMARY

SDG 7708
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Case no SDG H4074

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R911053-01	B22CN2			7708-001	AM		11/18/09	11/19/09	BW	Americium 241 in Solids
10/23/09	ZA-L3-01		SOLID	7708-001	GAM		11/17/09	11/17/09	BW	Gamma Scan
11/13/09	F09-047-006	F09-047		7708-001	PU		11/18/09	11/19/09	BW	Plutonium, Isotopic in Solids
				7708-001	SR		11/17/09	11/20/09	BW	Total Strontium in Solids
R911053-02	B22CK9			7708-002	AM		11/18/09	11/19/09	BW	Americium 241 in Solids
10/16/09	ZA-L1-01		SOLID	7708-002	GAM		11/17/09	11/17/09	BW	Gamma Scan
11/13/09	F09-047-010	F09-047		7708-002	PU		11/18/09	11/19/09	BW	Plutonium, Isotopic in Solids
				7708-002	SR		11/17/09	11/20/09	BW	Total Strontium in Solids
R911053-03	Lab Control Sample			7708-003	AM		11/19/09	11/19/09	BW	Americium 241 in Solids
			SOLID	7708-003	GAM		11/17/09	11/17/09	BW	Gamma Scan
		F09-047		7708-003	PU		11/18/09	11/19/09	BW	Plutonium, Isotopic in Solids
				7708-003	SR		11/17/09	11/20/09	BW	Total Strontium in Solids
R911053-04	Method Blank			7708-004	AM		11/18/09	11/19/09	BW	Americium 241 in Solids
			SOLID	7708-004	GAM		11/17/09	11/17/09	BW	Gamma Scan
		F09-047		7708-004	PU		11/18/09	11/19/09	BW	Plutonium, Isotopic in Solids
				7708-004	SR		11/17/09	11/20/09	BW	Total Strontium in Solids
R911053-05	Duplicate (R911053-01)			7708-005	AM		11/18/09	11/19/09	BW	Americium 241 in Solids
10/23/09	ZA-L3-01		SOLID	7708-005	GAM		11/17/09	11/17/09	BW	Gamma Scan
11/13/09		F09-047		7708-005	PU		11/18/09	11/19/09	BW	Plutonium, Isotopic in Solids
				7708-005	SR		11/17/09	11/20/09	BW	Total Strontium in Solids

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	F09-047	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	2			1	1	1	5
GAM	F09-047	Gamma Scan	GAMMA_GS	2			1	1	1	5
PU	F09-047	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5
SR	F09-047	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TOTALS				8			4	4	4	20

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4074

7708-004

Method Blank

METHOD BLANK

SDG 7708 | Client/Case no CHPRC | SDG H4074

Contact N. Joseph Verville | Contract No. 33677

Lab sample id R911053-04 | Client sample id Method Blank

Dept sample id 7708-004 | Material/Matrix | SOLID

SAF No F09-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.644	0.67	1.59	1.00	U	SR
Americium 241	14596-10-2	-0.114	0.11	0.546	1.00	U	AM
Plutonium 238	13981-16-3	0.066	0.26	0.629	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.066	0.13	0.502	1.00	U	PU
Tin 126	15832-50-5	U		0.044		U	GAM
Beryllium 7	13966-02-4	U		0.286		U	GAM
Potassium 40	13966-00-2	U		0.544		U	GAM
Cobalt 60	10198-40-0	U		0.053	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.320		U	GAM
Antimony 125	14234-35-6	U		0.099		U	GAM
Cesium 134	13967-70-9	U		0.056		U	GAM
Cesium 137	10045-97-3	U		0.049	0.100	U	GAM
Europium 152	14683-23-9	U		0.110	0.100	U	GAM
Europium 154	15585-10-1	U		0.140	0.100	U	GAM
Europium 155	14391-16-3	U		0.081	0.100	U	GAM
Niobium 94	14681-63-1	U		0.043		U	GAM
Radium 226	13982-63-3	U		0.092		U	GAM
Radium 228	15262-20-1	U		0.165		U	GAM

QC-BLANK 71504

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

7708-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7708
Contact N. Joseph Verville

Client/Case no CHPRC SDG H4074
Contract No. 33677

Lab sample id R911053-03
Dept sample id 7708-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No F09-047

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	37.9	2.4	1.20	1.00		SR	36.0	1.4	105	80-120	80-120
Americium 241	4.52	1.2	0.734	1.00		AM	4.04	0.16	112	53-147	80-120
Plutonium 238	4.34	1.1	0.614	1.00		PU	4.64	0.19	94	62-138	80-120
Plutonium 239/240	5.44	1.2	0.425	1.00		PU	5.28	0.21	103	63-137	80-120
Cobalt 60	1.08	0.12	0.060	0.050		GAM	1.05	0.042	103	79-121	80-120
Cesium 137	1.42	0.12	0.084	0.100		GAM	1.33	0.053	107	81-119	80-120

QC-LCS #71503

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

7708-005

B22CN2

DUPLICATE

SDG 7708
Contact N. Joseph Verville

DUPLICATE
Lab sample id R911053-05
Dept sample id 7708-005
% solids 94.3

ORIGINAL
Lab sample id R911053-01
Dept sample id 7708-001
Received 11/13/09
% solids 94.3

Client/Case no CHPRC SDG H4074
Contract No. 33677

Client sample id B22CN2
Location/Matrix ZA-L3-01 SOLID
Collected/Weight 10/23/09 09:05 639 g
Custody/SAF No F09-047-006 F09-047

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	1340	13	1.00	1.00		SR	1290	13	1.01		4	22	0.5
Americium 241	0.511	0.41	0.490	1.00		AM	0.316	0.27	0.499	U	47	179	0.8
Plutonium 238	0.124	0.25	0.593	1.00	U	PU	0	0.25	0.517	U	-		0.7
Plutonium 239/240	0.866	0.50	0.473	1.00		PU	0.714	0.34	0.321		19	116	0.5
Tin 126	U		0.864		U	GAM	U		0.662	U	-		0.4
Beryllium 7	U		11.3		U	GAM	U		9.18	U	-		0.3
Potassium 40	13.0	1.5	0.692			GAM	11.5	1.2	0.811		12	28	1.3
Cobalt 60	U		0.080	0.050	U	GAM	U		0.070	U	-		0.2
Ruthenium 106	U		4.76		U	GAM	U		4.41	U	-		0.1
Antimony 125	U		2.86		U	GAM	U		2.36	U	-		0.3
Cesium 134	U		0.156		U	GAM	U		0.159	U	-		0
Cesium 137	1090	3.0	0.690	0.100		GAM	1060	2.0	0.604		3	15	0.6
Europium 152	U		2.46	0.100	U	GAM	U		2.02	U	-		0.3
Europium 154	U		0.276	0.100	U	GAM	U		0.603	U	-		1.0
Europium 155	U		1.73	0.100	U	GAM	U		1.34	U	-		0.4
Niobium 94	U		0.099		U	GAM	U		0.119	U	-		0.3
Radium 226	U		1.03		U	GAM	U		0.848	U	-		0.3
Radium 228	U		1.04		U	GAM	U		0.730	U	-		0.5

QC-DUP#1 71505

ARRA BC Controlled Area Remediation-In Process Soil

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4074

7708-001

B22CN2

DATA SHEET

SDG 7708 | Client/Case no CHPRC | SDG H4074
Contact N. Joseph Verville | Contract No. 33677

Lab sample id R911053-01 | Client sample id B22CN2
Dept sample id 7708-001 | Location/Matrix ZA-L3-01 | SOLID
Received 11/13/09 | Collected/Weight 10/23/09 09:05 | 639 g
% solids 94.3 | Custody/SAF No F09-047-006 | F09-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	1290	13	1.01	1.00		SR
Americium 241	14596-10-2	0.316	0.27	0.499	1.00	U	AM
Plutonium 238	13981-16-3	0	0.25	0.517	1.00	U	PU
Plutonium 239/240	PU-239/240	0.714	0.34	0.321	1.00		PU
Tin 126	15832-50-5	U		0.662		U	GAM
Beryllium 7	13966-02-4	U		9.18		U	GAM
Potassium 40	13966-00-2	11.5	1.2	0.811			GAM
Cobalt 60	10198-40-0	U		0.070	0.050	U	GAM
Ruthenium 106	13967-48-1	U		4.41		U	GAM
Antimony 125	14234-35-6	U		2.36		U	GAM
Cesium 134	13967-70-9	U		0.159		U	GAM
Cesium 137	10045-97-3	1060	2.0	0.604	0.100		GAM
Europium 152	14683-23-9	U		2.02	0.100	U	GAM
Europium 154	15585-10-1	U		0.603	0.100	U	GAM
Europium 155	14391-16-3	U		1.34	0.100	U	GAM
Niobium 94	14681-63-1	U		0.119		U	GAM
Radium 226	13982-63-3	U		0.848		U	GAM
Radium 228	15262-20-1	U		0.730		U	GAM

ARRA BC Controlled Area Remediation-In Process Soil

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-DS
Version 3.06
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DATA SHEETS
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SUMMARY DATA SECTION
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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4074

7708-002 B22CK9

DATA SHEET

SDG	7708	Client/Case no	CHPRC SDG H4074
Contact	N. Joseph Verville	Contract	No. 33677
Lab sample id	R911053-02	Client sample id	B22CK9
Dept sample id	7708-002	Location/Matrix	ZA-L1-01 SOLID
Received	11/13/09	Collected/Weight	10/16/09 10:10 686 g
% solids	93.8	Custody/SAF No	F09-047-010 F09-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	43.2	1.2	0.244	1.00		SR
Americium 241	14596-10-2	0.052	0.16	0.288	1.00	U	AM
Plutonium 238	13981-16-3	-0.069	0.092	0.252	1.00	U	PU
Plutonium 239/240	PU-239/240	0.046	0.046	0.175	1.00	U	PU
Tin 126	15832-50-5	U		0.167		U	GAM
Beryllium 7	13966-02-4	U		1.65		U	GAM
Potassium 40	13966-00-2	11.8	1.2	0.445			GAM
Cobalt 60	10198-40-0	U		0.051	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.777		U	GAM
Antimony 125	14234-35-6	U		0.356		U	GAM
Cesium 134	13967-70-9	U		0.064		U	GAM
Cesium 137	10045-97-3	32.4	0.35	0.102	0.100		GAM
Europium 152	14683-23-9	U		0.371	0.100	U	GAM
Europium 154	15585-10-1	U		0.156	0.100	U	GAM
Europium 155	14391-16-3	U		0.320	0.100	U	GAM
Niobium 94	14681-63-1	U		0.042		U	GAM
Radium 226	13982-63-3	0.415	0.14	0.168			GAM
Radium 228	15262-20-1	0.748	0.20	0.186			GAM

ARRA BC Controlled Area Remediation-In Process Soil

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7708
Contact N. Joseph Verville

Client CHPRC
Contract No. 33677
Contract SDG H4074

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241
Preparation batch 7215-142					
R911053-01			7708-001	B22CN2	U
R911053-02			7708-002	B22CK9	U
R911053-03			7708-003	Lab Control Sample	ok
R911053-04			7708-004	Method Blank	U
R911053-05			7708-005	Duplicate (R911053-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7215-142			2σ prep error 8.0 %	Reference Lab Notebook No. 7215 pg.142												
R911053-01			B22CN2	0.499	0.250			96		111			26	11/18/09	11/18	SS-055
R911053-02			B22CK9	0.288	0.500			80		111			33	11/18/09	11/18	SS-056
R911053-03			Lab Control Sample	0.734	0.250			77		115				11/18/09	11/19	SS-053
R911053-04			Method Blank	0.546	0.250			82		120				11/18/09	11/18	SS-032
R911053-05			Duplicate (R911053-01)	0.490	0.250			83		120			26	11/18/09	11/18	SS-033
Nominal values and limits from method				1.00	0.250			30-110		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.511 ± 0.318
YIELD 84 ± 15

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

Test PU Matrix SOLID
SDG 7708
Contact N. Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4074

RESULTS

LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7215-142						
R911053-01			7708-001	B22CN2	U	0.714
R911053-02			7708-002	B22CK9	U	U
R911053-03			7708-003	Lab Control Sample	ok	ok
R911053-04			7708-004	Method Blank	U	U
R911053-05			7708-005	Duplicate (R911053-01)	- U	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7215-142			2σ prep error 8.0 %	Reference Lab Notebook No. 7215 pg.142												
R911053-01			B22CN2	0.517	0.250			75		152			26	11/18/09	11/18	SS-036
R911053-02			B22CK9	0.252	0.500			70		153			33	11/18/09	11/18	SS-038
R911053-03			Lab Control Sample	0.614	0.250			76		112				11/18/09	11/18	SS-063
R911053-04			Method Blank	0.629	0.250			69		104				11/18/09	11/18	SS-063
R911053-05			Duplicate (R911053-01)	0.593	0.250			79		120			26	11/18/09	11/18	SS-031
Nominal values and limits from method				1.00	0.250			30-110		100	100		180			

PROCEDURES	REFERENCE	
	PUISO_PLATE_AEA	
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.521 ± 0.313
YIELD 74 ± 8

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

Test SR Matrix SOLID
SDG 7708
Contact N. Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4074

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7215-142					
R911053-01			7708-001	B22CN2	1290
R911053-02			7708-002	B22CK9	43.2
R911053-03			7708-003	Lab Control Sample	ok
R911053-04			7708-004	Method Blank	U
R911053-05			7708-005	Duplicate (R911053-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7215-142			2σ prep error 10.4 %	Reference Lab Notebook No. 7215 pg.142												
R911053-01			B22CN2	1.01	0.250			96		100			25	11/17/09	11/17	GRB-201
R911053-02			B22CK9	0.244	1.00			92		100			32	11/17/09	11/17	GRB-203
R911053-03			Lab Control Sample	1.20	0.250			95		100				11/17/09	11/17	GRB-217
R911053-04			Method Blank	1.59	0.250			94		100				11/17/09	11/17	GRB-232
R911053-05			Duplicate (R911053-01)	1.00	0.250			94		100			25	11/17/09	11/17	GRB-204
Nominal values and limits from method				1.00	0.250			40-110		100			180			

PROCEDURES
REFERENCE SRTOT_SEP_PRECIP_GPC
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1
CP-383 Strontium in Dissolved Solid of < 5.0g Aliquot, rev 4

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 1.01 ± 0.979
YIELD 94 ± 3

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/20/09

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4074

Test GAM Matrix SOLID
SDG 7708
Contact N. Joseph Verville

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4074

RESULTS

LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137
Preparation batch 7215-142							
R911053-01			7708-001	B22CN2	U		1060
R911053-02			7708-002	B22CK9	U		32.4
R911053-03			7708-003	Lab Control Sample	ok		ok
R911053-04			7708-004	Method Blank	U		U
R911053-05			7708-005	Duplicate (R911053-01)	-	U	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.100

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7215-142			2σ prep error 7.0 %	Reference Lab Notebook No. 7215 pg.142												
R911053-01			B22CN2	134	177					171			25	11/16/09	11/17	JR,01,00
R911053-02			B22CK9	22.2	190					174			32	11/16/09	11/17	JR,02,00
R911053-03			Lab Control Sample	0.060	170					174				11/16/09	11/17	JR,05,00
R911053-04			Method Blank	8.73	170					175				11/16/09	11/17	JR,07,00
R911053-05			Duplicate (R911053-01)	166	177					122			25	11/16/09	11/17	JR,07,00
Nominal values and limits from method				0.050	170					100			180			

PROCEDURES REFERENCE GAMMA_GS
SPP-100 Preparation of Sample for Gamma Spectroscopy, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 66.2 ± 155
YIELD _____ ± _____

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/20/09

SDG 7708
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4074

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.

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/20/09

SDG 7708
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
Contract No. 33677
Case no SDG_H4074

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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Contact N. Joseph Verville

REPORT GUIDE

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Contract No. 33677
Case no SDG_H4074

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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GUIDE, cont.

Client CHPRC
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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

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

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

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

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

  2. The error of ADDED.

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

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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REPORT GUIDE

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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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GUIDE, cont.

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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.

SDG 7708
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
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Case no SDG_H4074

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.

SDG 7708
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC
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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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GUIDE, cont.

Client CHPRC
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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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.

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F09-047-006	PAGE 1 OF 1
COLLECTOR KJ Young	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 373-5869	**PROJECT COORDINATOR** WIDRIG, DL	**PRICE CODE** 8B	**DATA TURNAROUND**
SAMPLING LOCATION ZA-L3-01	**PROJECT DESIGNATION** ARRA BC Controlled Area Remediation - In Process Soil Sampling		**SAF NO.** F09-047	**AIR QUALITY** ☐	7 Days / 15 Days
ICE CHEST NO.	**FIELD LOGBOOK NO.** HNF-N-507-7	**ACTUAL SAMPLE DEPTH** 1" – 3"	**COA** 302222ES10	**METHOD OF SHIPMENT** FEDERAL EXPRESS	
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** SEE PTR H4074 (7708)		**BILL OF LADING/AIR BILL NO.** SEE PTR KM002000		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO:B22CR5

PRESERVATION	None	None	None
TYPE OF CONTAINER	G/P	G/P	G/P
NO. OF CONTAINER(S)	1	1	1
VOLUME	500mL	120mL	120mL
SAMPLE ANALYSIS	Gamma Spectroscopy {Cesium-137}	Strontium-89,90 -- Total Sr;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

N/A 10/23/09 KJY

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B22CN2	SOIL	10/23/09	0905	X	X	X
			N/A 10/23/09 KJY			

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KJ Young	10/23/09 1100	SSU #1	10/23/09 1100
SSU #1	11/12/09 0800	KJ. Young	11/12/09 0800
KJ. Young	11/12/09 0930	FED EX	11/12/09 0930
FED EX		M. NATARAJAN	11/13/09 0930

SPECIAL INSTRUCTIONS
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Americium-241 {Americium-241} Isotopic Plutonium {Plutonium-239/240, Plutonium-238}

ORIGINAL

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F09-047-010	PAGE 1 OF 1
COLLECTOR FM Hall CHPRC	COMPANY CONTACT WIDRIG, DL	TELEPHONE NO. 373-5869	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE 8B	DATA TURNAROUND
SAMPLING LOCATION ZA-L1-01	PROJECT DESIGNATION ARRA BC Controlled Area Remediation - In Process Soil Sampling		SAF NO. F09-047	AIR QUALITY ☐	7 Days / 15 Days
ICE CHEST NO. GWS-102	FIELD LOGBOOK NO. HNF-N-507-7	ACTUAL SAMPLE DEPTH 0-3"	COA 302222ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Eberline Services	OFFSITE PROPERTY NO. SEE PTR H4074 (7708)		BILL OF LADING/AIR BILL NO. SEE PTR KM602000		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO:B22CR4

PRESERVATION	None	None	None										
TYPE OF CONTAINER	G/P	G/P	G/P										
NO. OF CONTAINER(S)	1	1	1										
VOLUME	500mL	120mL	120mL										
SAMPLE ANALYSIS	Gamma Spectroscopy {Cesium-137}	Strontium-89,90 -- Total Sr;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS										

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B22CK9	SOIL	10/16/09	1010	✓	✓	✓							

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC [signature]	DATE/TIME 1300 OCT 16 2009	RECEIVED BY/STORED IN SSU #1	DATE/TIME 1300 OCT 16 2009
RELINQUISHED BY/REMOVED FROM S.S.O #1 11/12/09	DATE/TIME 0800	RECEIVED BY/STORED IN KJ. Young 11/12/09 [signature]	DATE/TIME 0800
RELINQUISHED BY/REMOVED FROM KJ. Young [signature] 11/12/09	DATE/TIME 0930	RECEIVED BY/STORED IN FED EX 11/12/09	DATE/TIME 0930
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN MF. [signature] 11/13/09	DATE/TIME 0930
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

SPECIAL INSTRUCTIONS
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Americium-241 {Americium-241} Isotopic Plutonium {Plutonium-239/240, Plutonium-238}

ORIGINAL

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

A-6003-618(01/06)

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JH 11/18/09

Client: CHPRC City MCHLAND State WA

Date/Time received 11/13/09 0930 CoC No. F09-047-006, 010

Container I.D. No. GRP-08-011 Requested TAT (Days) 7/15 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: 2 Sample Matrix S
7. Number of containers per sample: 3 (Or see CoC _____)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [X] pH _____ Preservative _____
13. Describe any anomalies: CB 11/13/09
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by JH Date: 11/13/09 Time: 1015

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
B22CN2	600						
OTHER	<60						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100982 Calibration date 05AUG 09