

RECEIVED DECEMBER 30, 2010

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EBERLINE ANALYTICAL CORPORATION

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# EBERLINE

SERVICES

December 30, 2010

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 S0-12-302-7767, SDG H4474**

Dear Mr. Neely:

Enclosed is a data report for three water samples designated under SAF No. F11-040 received at Eberline Analytical on December 22, 2010. The samples were analyzed according to the accompanying chain-of-custody documents.

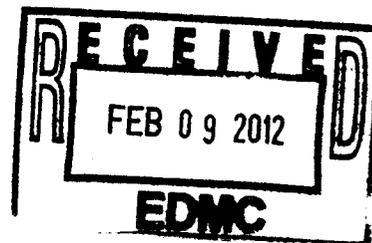
Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville  
Client Services Manager

NJV/ljb

Enclosure: Case Narrative



## 1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4474 was composed of three water samples designated under SAF No. F11-040 with a Project Designation of: 600-287 –PL – QC Sampling.

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

## 2.0 ANALYSIS NOTES

### 2.1 Tritium Analysis

No problems were encountered during the course of the analysis. The requested analysis was TRITIUM\_MIDLEVEL, which requires a detection limit of 30 pCi/L. Eberline Analytical cannot achieve a required detection limit of 30 pCi/L therefore, after consulting with CHPRC, it was agreed that Eberline would do the "best" it could within the required turn-around-time. The achieved detection limits for the field samples were 145 pCi/L, 147 pCi/L, and 149 pCi/L respectively; tritium activity was not detected in the field samples that was greater than the individual sample specific MDA. The tritium QC Matrix Spike analysis data sheet denotes an "X" qualifier, which indicates that some data was manually entered and may need to be double-checked; in this case the "added amount" was manually entered and subsequently double-checked. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD, or statistical control limit is calculated.

### 2.2 Nickel-63 Analysis

No problems were encountered during the course of the analysis. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD, or statistical control limit is calculated.

### 2.3 Strontium-90 Analysis

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD or statistical control limit is calculated.

### 2.4 Technetium-99 Analysis

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD or statistical control limit is calculated.

### 2.5 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit.

**2.6 Isotopic Uranium Analysis**

The U-235 QC LCS recovery was 129%, greater than the upper control limit of 120%. Isotopic uranium activities were not observed in the samples that was greater than the individual sample specific MDA's. See the attached Issue Resolution Form. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. For some analytical results the gross counts minus the sum of the background counts and the counts contributed from the tracer were 0; therefore the results reported as 0 are correct. No other problems were encountered during the course of the analyses.

**2.7 Isotopic Plutonium Analysis**

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. For some analytical results the gross counts minus the sum of the background counts and the counts contributed from the tracer were 0; therefore the results reported as 0 are correct.

**2.8 Americium-241 Analysis**

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD or statistical control limit is calculated. For some analytical results the gross counts minus the sum of the background counts and the counts contributed from the tracer were 0; therefore the results reported as 0 are correct.

**2.9 Gamma Spectroscopy**

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

12/30/10  
\_\_\_\_\_  
Date

**ISSUE RESOLUTION FORM**

**CHPRC TRACKING NUMBER:** 10-295

Date : **December 30, 2010**

SAF No. **F11-040**

SDG: **H4474** LOGIN No.: TEST: **TRITIUM\_MIDLEVEL**

Sample No.(s) **B2B4X1, B2B4X3, B2B4X4**

Submitted By: **J. Verville, EAC**  
Phone No. **510-235-2633 x264**  
Fax No. **510-235-0438**

Submitted To: **Sara Champoux**  
Phone No. **509-373-5290**  
Fax No.

**ISSUE**

TRITIUM\_MIDLEVEL requires a detection limit of 30 pCi/L which is an RDL that Eberline cannot achieve through installed procedures.

**PROPOSED RESOLUTION**

Eberline will make a best effort to achieve a detection limit that will be between 80-150 pCi/L given the expedited turn-around requested for the SDG.

**CHPRC/BHI/WMH/PNNL COMMENTS**

Accept proposed resolution and note actual detection limit achieved versus requested detection limit of 30 pCi/L in case narrative.

J. G. Douglas 12/30/2010  
Signature and Date

**ISSUE RESOLUTION FORM**

**CHPRC TRACKING NUMBER:** 10-296

Date: December 30, 2010

SAF No. F11-040

SDG: H4474 LOGIN No.: TEST: Isotopic Uranium

Sample No.(s) **B2B4X1, B2B4X3**

Submitted By: J. Verville, EAC

Submitted To: Sara Champoux

Phone No. 510-235-2633 x264

Phone No. 509-373-5290

Fax No. 510-235-0438

Fax No.

**ISSUE**

The QC LCS recovery for U-235 was 129%, greater than the upper control limit of 120%. All sample results were non-detect and all MDA's were less than the RDL.

**PROPOSED RESOLUTION**

Due to the expedited TAT report the results "as are". A reanalysis has been initiated, the result for which will be reported ASAP.

**CHPRC/BHI/WMH/PNNL COMMENTS**

Accept proposed resolution and note LCS recovery failure in case narrative.

J. G. Douglas 12/30/2010

Signature and Date

EBERLINE ANALYTICAL / RICHMOND  
SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

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

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UB  
Prepared by \_\_\_\_\_  
nsj  
Reviewed by \_\_\_\_\_

Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767

Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC

Contract No. 33677

Case no SDG H4474

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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SUMMARY DATA SECTION

Page 1

Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG H4474

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

**LAB SAMPLE SUMMARY**

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

LAB							CHAIN OF	
SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CUSTODY	COLLECTED	
S012302-01	B2B4X1	600-287-PL EB (Day 1)	WATER		F11-040	F11-040-008	12/19/10 07:05	
S012302-02	B2B4X3	600-287-PL FB 1	WATER		F11-040	F11-040-010	12/19/10 10:30	
S012302-03	B2B4X4	600-287-PL TB1	WATER		F11-040	F11-040-011	12/19/10 07:30	
S012302-04	Lab Control Sample		WATER		F11-040			
S012302-05	Method Blank		WATER		F11-040			
S012302-06	Duplicate (S012302-01)	600-287-PL EB (Day 1)	WATER		F11-040		12/19/10 07:05	
S012302-07	Spike (S012302-02)	600-287-PL FB 1	WATER		F11-040		12/19/10 10:30	

LAB SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLINE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

**QC SUMMARY**

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7767	F11-040-008	B2B4X1	WATER		10.0 L		12/22/10 3	S012302-01	7767-001
	F11-040-010	B2B4X3	WATER		10.0 L		12/22/10 3	S012302-02	7767-002
	F11-040-011	B2B4X4	WATER		0.125 L		12/22/10 3	S012302-03	7767-003
		Method Blank	WATER					S012302-05	7767-005
		Lab Control Sample	WATER					S012302-04	7767-004
		Duplicate (S012302-01)	WATER		10.0 L		12/22/10 3	S012302-06	7767-006
		Spike (S012302-02)	WATER		10.0 L		12/22/10 3	S012302-07	7767-007

QC SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-QS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

**PREP BATCH SUMMARY**

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS	DUP/ORIG
<b>Alpha Spectroscopy</b>											
AM	WATER	Americium 241 in Water	7287-006	8.0	2			1	1	1/1	
PU	WATER	Plutonium, Isotopic in Water	7287-006	8.0	2			1	1	1/1	
TH	WATER	Thorium, Isotopic in Water	7287-006	8.0	2			1	1	1/1	
U	WATER	Uranium, Isotopic in Water	7287-006	8.0	2			1	1	1/1	
<b>Beta Counting</b>											
SR	WATER	Total Strontium in Water	7287-006	10.4	2			1	1	1/1	
TC	WATER	Technetium 99 in Water	7287-006	13.2	2			1	1	1/1	
<b>Gamma Spectroscopy</b>											
GAM	WATER	Gamma Emitters	7287-006	7.0	2			1	1	1/1	
<b>Liquid Scintillation Counting</b>											
H	WATER	Tritium in Water	7287-006	10.0	3			1	1	1/1	1/1 X
NI_L	WATER	Nickel-63 in Liquid	7287-006	11.2	2			1	1	1/1	

Blank, LCS, Duplicate and Spike planchets are those in the same preparation batch as some Client sample.

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-PBS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

**LAB WORK SUMMARY**

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

LAB SAMPLE	CLIENT SAMPLE ID					SUF-					
COLLECTED	LOCATION		MATRIX								
RECEIVED	CUSTODY	SAF No		PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
S012302-01	B2B4X1			7767-001	AM		12/28/10	12/30/10	MWT	Americium 241 in Water	
12/19/10	600-287-PL EB (Day 1)		WATER	7767-001	GAM		12/22/10	12/27/10	MWT	Gamma Emitters	
12/22/10	F11-040-008	F11-040		7767-001	H		12/23/10	12/28/10	MWT	Tritium in Water	
				7767-001	NI_L		12/29/10	12/30/10	MWT	Nickel-63 in Liquid	
				7767-001	PU		12/28/10	12/30/10	MWT	Plutonium, Isotopic in Water	
				7767-001	SR		12/27/10	12/29/10	MWT	Total Strontium in Water	
				7767-001	TC		12/28/10	12/29/10	MWT	Technetium 99 in Water	
				7767-001	TH		12/29/10	12/30/10	MWT	Thorium, Isotopic in Water	
				7767-001	U		12/28/10	12/29/10	MWT	Uranium, Isotopic in Water	
S012302-02	B2B4X3			7767-002	AM		12/28/10	12/30/10	MWT	Americium 241 in Water	
12/19/10	600-287-PL FB 1		WATER	7767-002	GAM		12/22/10	12/27/10	MWT	Gamma Emitters	
12/22/10	F11-040-010	F11-040		7767-002	H		12/23/10	12/28/10	MWT	Tritium in Water	
				7767-002	NI_L		12/29/10	12/30/10	MWT	Nickel-63 in Liquid	
				7767-002	PU		12/28/10	12/30/10	MWT	Plutonium, Isotopic in Water	
				7767-002	SR		12/27/10	12/29/10	MWT	Total Strontium in Water	
				7767-002	TC		12/28/10	12/29/10	MWT	Technetium 99 in Water	
				7767-002	TH		12/29/10	12/30/10	MWT	Thorium, Isotopic in Water	
				7767-002	U		12/28/10	12/29/10	MWT	Uranium, Isotopic in Water	
S012302-03	B2B4X4			7767-003	H		12/23/10	12/28/10	MWT	Tritium in Water	
12/19/10	600-287-PL TB1		WATER								
12/22/10	F11-040-011	F11-040									
S012302-04	Lab Control Sample			7767-004	AM		12/29/10	12/30/10	MWT	Americium 241 in Water	
			WATER	7767-004	GAM		12/22/10	12/27/10	MWT	Gamma Emitters	
		F11-040		7767-004	H		12/23/10	12/28/10	MWT	Tritium in Water	
				7767-004	NI_L		12/29/10	12/30/10	MWT	Nickel-63 in Liquid	
				7767-004	PU		12/28/10	12/30/10	MWT	Plutonium, Isotopic in Water	
				7767-004	SR		12/27/10	12/29/10	MWT	Total Strontium in Water	
				7767-004	TC		12/27/10	12/29/10	MWT	Technetium 99 in Water	
				7767-004	TH		12/29/10	12/30/10	MWT	Thorium, Isotopic in Water	
				7767-004	U		12/28/10	12/29/10	MWT	Uranium, Isotopic in Water	

**WORK SUMMARY**

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LWS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

**WORK SUMMARY, cont.**

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

LAB SAMPLE	CLIENT SAMPLE ID		MATRIX		SUF-					
COLLECTED	LOCATION			PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD
RECEIVED	CUSTODY	SAF No								
S012302-05	Method Blank			7767-005	AM		12/29/10	12/30/10	MWT	Americium 241 in Water
			WATER	7767-005	GAM		12/22/10	12/27/10	MWT	Gamma Emitters
		F11-040		7767-005	H		12/23/10	12/28/10	MWT	Tritium in Water
				7767-005	NI_L		12/29/10	12/30/10	MWT	Nickel-63 in Liquid
				7767-005	PU		12/29/10	12/30/10	MWT	Plutonium, Isotopic in Water
				7767-005	SR		12/27/10	12/29/10	MWT	Total Strontium in Water
				7767-005	TC		12/28/10	12/29/10	MWT	Technetium 99 in Water
				7767-005	TH		12/29/10	12/30/10	MWT	Thorium, Isotopic in Water
				7767-005	U		12/28/10	12/29/10	MWT	Uranium, Isotopic in Water
S012302-06	Duplicate (S012302-01)			7767-006	AM		12/28/10	12/30/10	MWT	Americium 241 in Water
12/19/10	600-287-PL EB (Day 1)		WATER	7767-006	GAM		12/22/10	12/27/10	MWT	Gamma Emitters
12/22/10		F11-040		7767-006	H		12/23/10	12/28/10	MWT	Tritium in Water
				7767-006	NI_L		12/29/10	12/30/10	MWT	Nickel-63 in Liquid
				7767-006	PU		12/29/10	12/30/10	MWT	Plutonium, Isotopic in Water
				7767-006	SR		12/27/10	12/29/10	MWT	Total Strontium in Water
				7767-006	TC		12/28/10	12/29/10	MWT	Technetium 99 in Water
				7767-006	TH		12/29/10	12/30/10	MWT	Thorium, Isotopic in Water
				7767-006	U		12/28/10	12/29/10	MWT	Uranium, Isotopic in Water
S012302-07	Spike (S012302-02)			7767-007	H		12/23/10	12/28/10	MWT	Tritium in Water
12/19/10	600-287-PL FB 1		WATER							
12/22/10		F11-040								

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LWS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

**WORK SUMMARY, cont.**

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL	
AM	F11-040	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	2			1	1	1	5	
GAM	F11-040	Gamma Emitters	GAMMA_GS	2			1	1	1	5	
H	F11-040	Tritium in Water	906.0_H3_LSC	3			1	1	1	7	
NI_L	F11-040	Nickel-63 in Liquid	NI63_LSC	2			1	1	1	5	
PU	F11-040	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	2			1	1	1	5	
SR	F11-040	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5	
TC	F11-040	Technetium 99 in Water	TC99_TR_SEP_GPC	2			1	1	1	5	
TH	F11-040	Thorium, Isotopic in Water	THISO_IE_PLATE_AEA	2			1	1	1	5	
U	F11-040	Uranium, Isotopic in Water	UIISO_PLATE_AEA	2			1	1	1	5	
<b>TOTALS</b>				<b>19</b>			<b>9</b>	<b>9</b>	<b>9</b>	<b>1</b>	<b>47</b>

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LWS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL / RICHMOND**  
**SAMPLE DELIVERY GROUP H4474**

7767-005

Method Blank

**METHOD BLANK**

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 33677</u>	
Lab sample id <u>S012302-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7767-005</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>F11-040</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	-21.1	86	<u>147</u>	30.0	U	H
Nickel 63	13981-37-8	-1.33	1.7	2.94	15.0	U	NI_L
Total Strontium	SR-RAD	-0.257	0.42	0.818	2.00	U	SR
Technetium 99	14133-76-7	-0.824	1.3	2.84	15.0	U	TC
Thorium 228	14274-82-9	0.060	0.12	0.221		U	TH
Thorium 230	14269-63-7	-0.060	0.16	0.368	1.00	U	TH
Thorium 232	TH-232	0	0.040	0.153	1.00	U	TH
Uranium 233/234	U-233/234	0.027	0.11	0.206	1.00	U	U
Uranium 235	15117-96-1	0	0.065	0.250	1.00	U	U
Uranium 238	U-238	0	0.054	0.206	1.00	U	U
Americium 241	14596-10-2	0.151	0.18	0.289	1.00	U	AM
Plutonium 238	13981-16-3	0.043	0.17	0.410	1.00	U	PU
Plutonium 239/240	PU-239/240	0.043	0.086	0.328	1.00	U	PU
Tin 126	15832-50-5	U		14.2		U	GAM
Beryllium 7	13966-02-4	U		61.4		U	GAM
Potassium 40	13966-00-2	U		124		U	GAM
Cobalt 60	10198-40-0	U		10.3	25.0	U	GAM
Ruthenium 106	13967-48-1	U		74.2		U	GAM
Antimony 125	14234-35-6	U		17.0		U	GAM
Cesium 134	13967-70-9	U		10.9		U	GAM
Cesium 137	10045-97-3	U		7.92	15.0	U	GAM
Europium 152	14683-23-9	U		21.2	50.0	U	GAM
Europium 154	15585-10-1	U		23.3	50.0	U	GAM
Europium 155	14391-16-3	U		18.1	50.0	U	GAM
Niobium 94	14681-63-1	U		7.22		U	GAM
Radium 226	13982-63-3	U		16.3		U	GAM
Radium 228	15262-20-1	U		36.2		U	GAM

**METHOD BLANKS**

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**SUMMARY DATA SECTION**

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

EBERLINE ANALYTICAL / RICHMOND  
SAMPLE DELIVERY GROUP H4474

7767-005

Method Blank

BLANK, cont.

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>S012302-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7767-005</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>F11-040</u>	

QC-BLANK #76587

METHOD BLANKS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

7767-004

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7767</u>	Client/Case no <u>CHPRC</u> <u>SDG H4474</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 33677</u>
Lab sample id <u>S012302-04</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7767-004</u>	Material/Matrix <u>WATER</u>
	SAF No <u>F11-040</u>

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ	LMTS	PROTOCOL
	pCi/L	(COUNT)	pCi/L	pCi/L	FIERS TEST	pCi/L	pCi/L	‡	(TOTAL)	LIMITS	
Tritium	2480	140	<u>149</u>	30.0	H	2550	100	97	82-118	80-120	
Nickel 63	200	5.8	2.95	15.0	NI_L	216	8.6	93	83-117	80-120	
Total Strontium	18.7	1.0	0.513	2.00	SR	17.5	0.70	107	80-120	80-120	
Technetium 99	1190	21	3.90	15.0	TC	1090	44	109	77-123	80-120	
Thorium 230	8.46	1.1	0.354	1.00	TH	9.44	0.38	90	79-121	80-120	
Uranium 233/234	10.1	1.4	0.805	1.00	U	9.28	0.37	109	73-127	80-120	
Uranium 235	9.71	1.4	0.251	1.00	U	7.54	0.30	<u>129</u>	68-132	80-120	
Uranium 238	10.8	1.5	0.771	1.00	U	10.1	0.40	107	74-126	80-120	
Americium 241	11.5	1.6	0.410	1.00	AM	10.1	0.40	114	72-128	80-120	
Plutonium 238	10.9	1.7	0.402	1.00	PU	11.5	0.46	95	74-126	80-120	
Plutonium 239/240	12.7	1.9	0.321	1.00	PU	13.2	0.53	96	75-125	80-120	
Cobalt 60	422	23	11.0	25.0	GAM	412	16	102	85-115	80-120	
Cesium 137	469	21	14.0	15.0	GAM	442	18	106	85-115	80-120	

QC-LCS #76586

Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

7767-006

B2B4X1

**DUPLICATE**

SDG <u>7767</u>		Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>		Contract <u>No. 33677</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>		
Lab sample id <u>S012302-06</u>	Lab sample id <u>S012302-01</u>	Client sample id <u>B2B4X1</u>	
Dept sample id <u>7767-006</u>	Dept sample id <u>7767-001</u>	Location/Matrix <u>600-287-PL EB (Day 1)</u>	<u>WATER</u>
	Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 07:05</u>	<u>10.0 L</u>
		Custody/SAF No <u>F11-040-008</u>	<u>F11-040</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	TEST	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	DER
	pCi/L	(COUNT)	pCi/L	pCi/L	FIERS		pCi/L	(COUNT)	pCi/L	FIERS	%	TOT	σ
Tritium	108	90	<u>147</u>	30.0	U	H	20.8	86	<u>145</u>	U	-	1.4	
Nickel 63	-0.744	1.7	2.88	15.0	U	NI_L	-0.668	1.7	2.88	U	-	0.1	
Total Strontium	0.020	0.39	0.758	2.00	U	SR	-0.046	0.35	0.711	U	-	0.3	
Technetium 99	-0.707	1.9	4.31	15.0	U	TC	-0.409	1.4	3.87	U	-	0.3	
Thorium 228	0	0.083	0.198		U	TH	0.018	0.11	0.202	U	-	0.3	
Thorium 230	-0.104	0.17	0.366	1.00	U	TH	-0.146	0.15	0.348	U	-	0.4	
Thorium 232	0	0.041	0.158	1.00	U	TH	0.018	0.036	0.139	U	-	0.7	
Uranium 233/234	0	0.048	0.185	1.00	U	U	0	0.061	0.234	U	-	0	
Uranium 235	0	0.059	0.224	1.00	U	U	0	0.074	0.283	U	-	0	
Uranium 238	0	0.048	0.185	1.00	U	U	0	0.061	0.234	U	-	0	
Americium 241	0.029	0.12	0.320	1.00	U	AM	0	0.13	0.366	U	-	0.3	
Plutonium 238	0.026	0.11	0.201	1.00	U	PU	-0.042	0.084	0.322	U	-	1.0	
Plutonium 239/240	0.026	0.053	0.201	1.00	U	PU	0	0.084	0.322	U	-	0.5	
Tin 126	U		11.1		U	GAM	U		15.0	U	-	0.4	
Beryllium 7	U		40.1		U	GAM	U		56.1	U	-	0.5	
Potassium 40	U		69.4		U	GAM	U		91.1	U	-	0.4	
Cobalt 60	U		4.88	25.0	U	GAM	U		7.65	U	-	0.6	
Ruthenium 106	U		47.4		U	GAM	U		59.6	U	-	0.3	
Antimony 125	U		13.4		U	GAM	U		17.8	U	-	0.4	
Cesium 134	U		7.18		U	GAM	U		8.75	U	-	0.3	
Cesium 137	U		5.09	15.0	U	GAM	U		6.67	U	-	0.4	
Europium 152	U		14.4	50.0	U	GAM	U		20.1	U	-	0.5	
Europium 154	U		15.1	50.0	U	GAM	U		19.8	U	-	0.4	
Europium 155	U		17.1	50.0	U	GAM	U		21.8	U	-	0.3	
Niobium 94	U		4.85		U	GAM	U		6.54	U	-	0.4	
Radium 226	U		12.0		U	GAM	U		17.1	U	-	0.5	
Radium 228	U		23.8		U	GAM	U		31.8	U	-	0.4	

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4474

7767-006

B2B4X1

DUPLICATE, cont.

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	<u>SDG H4474</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 33677</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>	
Lab sample id <u>S012302-06</u>	Lab sample id <u>S012302-01</u>	Client sample id <u>B2B4X1</u>
Dept sample id <u>7767-006</u>	Dept sample id <u>7767-001</u>	Location/Matrix <u>600-287-PL EB (Day 1)</u> <u>WATER</u>
	Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 07:05</u> <u>10.0 L</u>
		Custody/SAF No <u>F11-040-008</u> <u>F11-040</u>

QC-DUP#1 76588

600-287-PL - QC Sampling

Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4474

7767-007

B2B4X3

MATRIX SPIKE

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
<b>MATRIX SPIKE</b>	<b>ORIGINAL</b>	
Lab sample id <u>S012302-07</u>	Lab sample id <u>S012302-02</u>	Client sample id <u>B2B4X3</u>
Dept sample id <u>7767-007</u>	Dept sample id <u>7767-002</u>	Location/Matrix <u>600-287-PL FB 1</u> <u>WATER</u>
	Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 10:30</u> <u>10.0 L</u>
		Custody/SAF No <u>F11-040-010</u> <u>F11-040</u>

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC 3σ ‡ (TOTAL)	LMTS (LIMITS)	PROTOCOL
Tritium	22400	360	<u>149</u>	30.0	X H	22700	910	23.7	88	99	84-116 60-140	

QC-MS#2 76589

600-287-PL - QC Sampling

MATRIX SPIKES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

**EBERLINE ANALYTICAL / RICHMOND**  
**SAMPLE DELIVERY GROUP H4474**

7767-001

B2B4X1

**DATA SHEET**

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>S012302-01</u>	Client sample id <u>B2B4X1</u>	
Dept sample id <u>7767-001</u>	Location/Matrix <u>600-287-PL EB (Day 1)</u>	<u>WATER</u>
Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 07:05</u>	<u>10.0 L</u>
	Custody/SAF No <u>F11-040-008</u>	<u>F11-040</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	20.8	86	<u>145</u>	30.0	U	H
Nickel 63	13981-37-8	-0.668	1.7	2.88	15.0	U	NI_L
Total Strontium	SR-RAD	-0.046	0.35	0.711	2.00	U	SR
Technetium 99	14133-76-7	-0.409	1.4	3.87	15.0	U	TC
Thorium 228	14274-82-9	0.018	0.11	0.202		U	TH
Thorium 230	14269-63-7	-0.146	0.15	0.348	1.00	U	TH
Thorium 232	TH-232	0.018	0.036	0.139	1.00	U	TH
Uranium 233/234	U-233/234	0	0.061	0.234	1.00	U	U
Uranium 235	15117-96-1	0	0.074	0.283	1.00	U	U
Uranium 238	U-238	0	0.061	0.234	1.00	U	U
Americium 241	14596-10-2	0	0.13	0.366	1.00	U	AM
Plutonium 238	13981-16-3	-0.042	0.084	0.322	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.084	0.322	1.00	U	PU
Tin 126	15832-50-5	U		15.0		U	GAM
Beryllium 7	13966-02-4	U		56.1		U	GAM
Potassium 40	13966-00-2	U		91.1		U	GAM
Cobalt 60	10198-40-0	U		7.65	25.0	U	GAM
Ruthenium 106	13967-48-1	U		59.6		U	GAM
Antimony 125	14234-35-6	U		17.8		U	GAM
Cesium 134	13967-70-9	U		8.75		U	GAM
Cesium 137	10045-97-3	U		6.67	15.0	U	GAM
Europium 152	14683-23-9	U		20.1	50.0	U	GAM
Europium 154	15585-10-1	U		19.8	50.0	U	GAM
Europium 155	14391-16-3	U		21.8	50.0	U	GAM
Niobium 94	14681-63-1	U		6.54		U	GAM
Radium 226	13982-63-3	U		17.1		U	GAM
Radium 228	15262-20-1	U		31.8		U	GAM

**DATA SHEETS**

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

EBERLINE ANALYTICAL / RICHMOND  
SAMPLE DELIVERY GROUP H4474

7767-001

B2B4X1

DATA SHEET, cont

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 33677</u>	
Lab sample id <u>S012302-01</u>	Client sample id <u>B2B4X1</u>	
Dept sample id <u>7767-001</u>	Location/Matrix <u>600-287-PL EB (Day 1)</u>	<u>WATER</u>
Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 07:05</u>	<u>10.0 L</u>
	Custody/SAF No <u>F11-040-008</u>	<u>F11-040</u>

600-287-PL - QC Sampling

Lab id <u>EBRINE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

**EBERLINE ANALYTICAL / RICHMOND**  
**SAMPLE DELIVERY GROUP H4474**

7767-002

B2B4X3

**DATA SHEET**

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>S012302-02</u>	Client sample id <u>B2B4X3</u>	
Dept sample id <u>7767-002</u>	Location/Matrix <u>600-287-PL FB 1</u>	<u>WATER</u>
Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 10:30</u>	<u>10.0 L</u>
	Custody/SAF No <u>F11-040-010</u>	<u>F11-040</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	23.7	88	<u>147</u>	30.0	U	H
Nickel 63	13981-37-8	-0.336	1.7	2.89	15.0	U	NI_L
Total Strontium	SR-RAD	0.024	0.34	0.696	2.00	U	SR
Technetium 99	14133-76-7	-0.259	1.4	3.29	15.0	U	TC
Thorium 228	14274-82-9	0.141	0.14	0.226		U	TH
Thorium 230	14269-63-7	-0.118	0.14	0.399	1.00	U	TH
Thorium 232	TH-232	0.047	0.047	0.180	1.00	U	TH
Uranium 233/234	U-233/234	-0.032	0.064	0.244	1.00	U	U
Uranium 235	15117-96-1	0	0.077	0.296	1.00	U	U
Uranium 238	U-238	0	0.064	0.244	1.00	U	U
Americium 241	14596-10-2	0.170	0.20	0.376	1.00	U	AM
Plutonium 238	13981-16-3	0	0.085	0.325	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.085	0.325	1.00	U	PU
Tin 126	15832-50-5	U		10.7		U	GAM
Beryllium 7	13966-02-4	U		64.1		U	GAM
Potassium 40	13966-00-2	120	92	85.8			GAM
Cobalt 60	10198-40-0	U		10.8	25.0	U	GAM
Ruthenium 106	13967-48-1	U		75.4		U	GAM
Antimony 125	14234-35-6	U		18.6		U	GAM
Cesium 134	13967-70-9	U		11.6		U	GAM
Cesium 137	10045-97-3	U		9.32	15.0	U	GAM
Europium 152	14683-23-9	U		22.8	50.0	U	GAM
Europium 154	15585-10-1	U		26.5	50.0	U	GAM
Europium 155	14391-16-3	U		18.5	50.0	U	GAM
Niobium 94	14681-63-1	U		8.57		U	GAM
Radium 226	13982-63-3	U		17.6		U	GAM
Radium 228	15262-20-1	U		37.6		U	GAM

Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

DATA SHEETS

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SUMMARY DATA SECTION

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EBERLINE ANALYTICAL / RICHMOND  
SAMPLE DELIVERY GROUP H4474

7767-002

B2B4X3

DATA SHEET, cont

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 33677</u>	
Lab sample id <u>S012302-02</u>	Client sample id <u>B2B4X3</u>	
Dept sample id <u>7767-002</u>	Location/Matrix <u>600-287-PL FB 1</u>	<u>WATER</u>
Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 10:30</u>	<u>10.0 L</u>
	Custody/SAF No <u>F11-040-010</u>	<u>F11-040</u>

600-287-PL - QC Sampling

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

**EBERLINE ANALYTICAL / RICHMOND**  
**SAMPLE DELIVERY GROUP H4474**

7767-003

B2B4X4

**DATA SHEET**

SDG <u>7767</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4474</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>S012302-03</u>	Client sample id <u>B2B4X4</u>	
Dept sample id <u>7767-003</u>	Location/Matrix <u>600-287-PL TB1</u>	<u>WATER</u>
Received <u>12/22/10</u>	Collected/Volume <u>12/19/10 07:30</u>	<u>0.125 L</u>
	Custody/SAF No <u>F11-040-011</u>	<u>F11-040</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	-2.67	88	<u>149</u>	30.0	U	H

600-287-PL - QC Sampling

Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/30/10</u>

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test AM Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

AMERICIUM 241 IN WATER

ALPHA SPECTROSCOPY

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB RAW SUP- Americium  
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID 241

Preparation batch 7287-006

S012302-01	7767-001	B2B4X1	U
S012302-02	7767-002	B2B4X3	U
S012302-04	7767-004	Lab Control Sample	ok
S012302-05	7767-005	Method Blank	U
S012302-06	7767-006	Duplicate (S012302-01)	- U

Nominal values and limits from method RDLs (pCi/L) 1.00

**METHOD PERFORMANCE**

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

Preparation batch 7287-006 2σ prep error 8.0 % Reference Lab Notebook No. 7287 pg.006

S012302-01	B2B4X1	0.366	0.500	68	114	9	12/28/10	12/28	SS-051
S012302-02	B2B4X3	0.376	0.500	69	114	9	12/28/10	12/28	SS-053
S012302-04	Lab Control Sample	0.410	0.500	64	108		12/28/10	12/29	SS-051
S012302-05	Method Blank	0.289	0.500	75	109		12/28/10	12/29	SS-052
S012302-06	Duplicate (S012302-01)	0.320	0.500	77	104	9	12/28/10	12/28	SS-050

Nominal values and limits from method 1.00 0.500 30-110 100 100 180

PROCEDURES REFERENCE AMCMISO\_IE\_PLATE\_AEA  
 CP-040 Environmental Water Dissolution, rev 9  
 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 MDA 0.352 ± 0.096  
 FOR 5 SAMPLES YIELD 71 ± 11

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test PU Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**LAB METHOD SUMMARY**

PLUTONIUM, ISOTOPIC IN WATER  
 ALPHA SPECTROSCOPY

**RESULTS**

LAB	RAW	SUF-		Plutonium	Plutonium	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240
Preparation batch 7287-006						
S012302-01			7767-001	B2B4X1	U	U
S012302-02			7767-002	B2B4X3	U	U
S012302-04			7767-004	Lab Control Sample	ok	ok
S012302-05			7767-005	Method Blank	U	U
S012302-06			7767-006	Duplicate (S012302-01)	- U	- U
Nominal values and limits from method			RDLs (pCi/L)	1.00	1.00	

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-			
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006			2σ prep error 8.0 %		Reference Lab Notebook No. 7287 pg.006											
S012302-01			B2B4X1	0.322	0.500			61	108				9	12/28/10	12/28	SS-031
S012302-02			B2B4X3	0.325	0.500			61	108				9	12/28/10	12/28	SS-032
S012302-04			Lab Control Sample	0.402	0.500			64	108					12/28/10	12/28	SS-033
S012302-05			Method Blank	0.410	0.500			58	109					12/28/10	12/29	SS-053
S012302-06			Duplicate (S012302-01)	0.201	0.500			69	153				10	12/28/10	12/29	SS-032
Nominal values and limits from method			1.00	0.500			30-110	100	100			180				

PROCEDURES REFERENCE PUIISO\_PLATE\_AEA  
 SPP-040 Environmental Water Dissolution, rev 2  
 CP-941 Plutonium in Water and Dissolved Samples by  
 Extraction Chromatography, rev 12  
 CP-008 Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD MDA 0.332 ± 0.168  
 FOR 5 SAMPLES YIELD 63 ± 8

METHOD SUMMARIES

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Lab id EBRLNE  
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 Form DVD-LMS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test TH Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

THORIUM, ISOTOPIC IN WATER  
 ALPHA SPECTROSCOPY

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB	RAW	SUF-			Thorium 228	Thorium 230	Thorium 232
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID				
Preparation batch 7287-006							
S012302-01		7767-001	B2B4X1		U	U	U
S012302-02		7767-002	B2B4X3		U	U	U
S012302-04		7767-004	Lab Control Sample			ok	
S012302-05		7767-005	Method Blank		U	U	U
S012302-06		7767-006	Duplicate (S012302-01)		- U	- U	- U
Nominal values and limits from method				RDLs (pCi/L)		1.00	1.00

**METHOD PERFORMANCE**

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006			2σ prep error 8.0 %	Reference Lab Notebook No. 7287 pg.006												
S012302-01		B2B4X1		0.348	0.500			94		152			10	12/29/10	12/29	SS-040
S012302-02		B2B4X3		0.399	0.500			76		156			10	12/29/10	12/29	SS-031
S012302-04		Lab Control Sample		0.354	0.500			89		157				12/29/10	12/29	SS-032
S012302-05		Method Blank		0.368	0.500			92		157				12/29/10	12/29	SS-033
S012302-06		Duplicate (S012302-01)		0.366	0.500			88		153			10	12/29/10	12/29	SS-031
Nominal values and limits from method				1.00	0.500			30-110		150	100		180			

PROCEDURES REFERENCE THISO\_IE\_PLATE\_AEA  
 SPP-062 Sample Aliquoting, rev 1  
 SPP-040 Environmental Water Dissolution, rev 2  
 CP-900 Thorium in Water and Dissolved Solid Samples by  
 Extraction Chromatography, rev 5  
 CP-008 Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD MDA 0.367 ± 0.039  
 FOR 5 SAMPLES YIELD 88 ± 14

METHOD SUMMARIES

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Lab id EBRLNE  
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 Form DVD-LMS  
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**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test U Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

URANIUM, ISOTOPIC IN WATER  
 ALPHA SPECTROSCOPY

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB	RAW	SUF-		1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)				
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	233/234	235	238	1+3	2σ	2+3	2σ	
Preparation batch 7287-006											
S012302-01		7767-001	B2B4X1	U	U	U					
S012302-02		7767-002	B2B4X3	U	U	U					
S012302-04		7767-004	Lab Control Sample	ok	<u>HIGH</u>	ok					
S012302-05		7767-005	Method Blank	U	U	U					
S012302-06		7767-006	Duplicate (S012302-01)	- U	- U	- U					
Nominal values and limits from method				RDLs (pCi/L)	1.00	1.00	1.00	100	4	Averages	

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006			2σ prep error 8.0 %		Reference Lab Notebook No. 7287 pg.006										
S012302-01		B2B4X1	0.283	0.500			81	109				9	12/28/10	12/28	SS-037
S012302-02		B2B4X3	0.296	0.500			81	109				9	12/28/10	12/28	SS-038
S012302-04		Lab Control Sample	0.805	0.500			97	109					12/28/10	12/28	SS-039
S012302-05		Method Blank	0.250	0.500			88	109					12/28/10	12/28	SS-040
S012302-06		Duplicate (S012302-01)	0.224	0.500			90	104				9	12/28/10	12/28	SS-047
Nominal values and limits from method			1.00	0.500			30-110	100	100			180			

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
SPP-062	Sample Aliquoting, rev 1	
CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5	
CP-008	Heavy Element Electroplating, rev 13	

AVERAGES ± 2 SD	MDA <u>0.372 ± 0.488</u>
FOR 5 SAMPLES	YIELD <u>87 ± 13</u>

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test SR Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

TOTAL STRONTIUM IN WATER  
 BETA COUNTING

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB	RAW	SUF-		Total	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7287-006					
S012302-01			7767-001	B2B4X1	U
S012302-02			7767-002	B2B4X3	U
S012302-04			7767-004	Lab Control Sample	ok
S012302-05			7767-005	Method Blank	U
S012302-06			7767-006	Duplicate (S012302-01)	- U

Nominal values and limits from method RDLs (pCi/L) 2.00

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	BFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006 2σ prep error 10.4 % Reference Lab Notebook No. 7287 pg.006																	
S012302-01			B2B4X1		0.711	0.500			85	100		8	12/27/10	12/27	GRB-221		
S012302-02			B2B4X3		0.696	0.500			81	100		8	12/27/10	12/27	GRB-222		
S012302-04			Lab Control Sample		0.513	0.500			82	150			12/27/10	12/27	GRB-225		
S012302-05			Method Blank		0.818	0.500			85	100			12/27/10	12/27	GRB-224		
S012302-06			Duplicate (S012302-01)		0.758	0.500			82	100		8	12/27/10	12/27	GRB-225		

Nominal values and limits from method 2.00 0.500 40-110 100 180

PROCEDURES REFERENCE SRTOT\_SEP\_PRECIP\_GPC  
 SPP-062 Sample Aliquoting, rev 1  
 CP-380 Strontium in Water Samples, rev 5

AVERAGES ± 2 SD MDA 0.699 ± 0.229  
 FOR 5 SAMPLES YIELD 83 ± 4

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
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METHOD SUMMARIES

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**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test TC Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

TECHNETIUM 99 IN WATER  
 BETA COUNTING

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB	RAW	SUF-	Technetium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 7287-006				
S012302-01		7767-001	B2B4X1	U
S012302-02		7767-002	B2B4X3	U
S012302-04		7767-004	Lab Control Sample	ok
S012302-05		7767-005	Method Blank	U
S012302-06		7767-006	Duplicate (S012302-01)	- U
Nominal values and limits from method			RDLs (pCi/L)	15.0

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006			2σ prep error 13.2 %		Reference Lab Notebook No. 7287 pg.006										
S012302-01		B2B4X1	3.87	0.100			90		100			9	12/23/10	12/28	GRB-228
S012302-02		B2B4X3	3.29	0.100			82		200			9	12/23/10	12/28	GRB-229
S012302-04		Lab Control Sample	3.90	0.100			94		100				12/23/10	12/27	GRB-223
S012302-05		Method Blank	2.84	0.100			89		200				12/23/10	12/28	GRB-230
S012302-06		Duplicate (S012302-01)	4.31	0.100			63		200			9	12/23/10	12/28	GRB-231
Nominal values and limits from method			15.0	0.100			30-110		50			180			

PROCEDURES REFERENCE TC99\_TR\_SEP\_GPC  
 SPP-062 Sample Aliquoting, rev 1  
 CP-431 Technetium-99 Purification of Soil or Resin by  
 Extraction Chromatography, rev 8  
 CP-008 Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD MDA 3.64 ± 1.15  
 FOR 5 SAMPLES YIELD 84 ± 25

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 12/30/10

**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test GAM Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

GAMMA EMITTERS  
 GAMMA SPECTROSCOPY

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB	RAW	SUF-				
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137	
Preparation batch 7287-006						
S012302-01		7767-001	B2B4X1	U	U	
S012302-02		7767-002	B2B4X3	U	U	
S012302-04		7767-004	Lab Control Sample	ok	ok	
S012302-05		7767-005	Method Blank	U	U	
S012302-06		7767-006	Duplicate (S012302-01)	- U	- U	
Nominal values and limits from method				RDLs (pCi/L)	25.0	15.0

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EPF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006			2σ prep error 7.0 %		Reference Lab Notebook No. 7287 pg.006										
S012302-01		B2B4X1	<u>37.7</u>	0.500					301			3	12/22/10	12/22	MB,08,00
S012302-02		B2B4X3	<u>36.7</u>	0.500					302			3	12/22/10	12/22	01,01,00
S012302-04		Lab Control Sample	14.0	0.500					302				12/22/10	12/22	01,02,00
S012302-05		Method Blank	<u>35.4</u>	0.500					302				12/22/10	12/22	01,04,00
S012302-06		Duplicate (S012302-01)	<u>29.1</u>	0.500					519			3	12/22/10	12/22	MB,08,00
Nominal values and limits from method			15.0	0.500					100				180		

PROCEDURES REFERENCE GAMMA\_GS  
 SPP-007 Aqueous Sample Receipt by Chemistry Laboratory,  
 rev 1  
 SPP-100 Preparation of Sample for Gamma Spectroscopy,  
 rev 0

AVERAGES ± 2 SD MDA 30.6 ± 19.7  
 FOR 5 SAMPLES YIELD \_\_\_\_\_ ± \_\_\_\_\_

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
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**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test H Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7287-006					
S012302-01		7767-001	B2B4X1	U	
S012302-02		7767-002	B2B4X3	U	
S012302-03		7767-003	B2B4X4	U	
S012302-04		7767-004	Lab Control Sample	ok	
S012302-05		7767-005	Method Blank	U	
S012302-06		7767-006	Duplicate (S012302-01)	-	U
S012302-07		7767-007	Spike (S012302-02)	ok	X

Nominal values and limits from method      RDLs (pCi/L)      30.0

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7287-006      2σ prep error 10.0 %      Reference Lab Notebook No. 7287 pg.006															
S012302-01		B2B4X1	<u>145</u>	0.0100			100		200			4	12/23/10	12/23	LSC-006
S012302-02		B2B4X3	<u>147</u>	0.0100			100		200			4	12/23/10	12/23	LSC-006
S012302-03		B2B4X4	<u>149</u>	0.0100			100		200			4	12/23/10	12/23	LSC-006
S012302-04		Lab Control Sample	<u>149</u>	0.100			10		200				12/23/10	12/23	LSC-006
S012302-05		Method Blank	<u>147</u>	0.100			10		200				12/23/10	12/23	LSC-006
S012302-06		Duplicate (S012302-01)	<u>147</u>	0.0100			100		200			4	12/23/10	12/23	LSC-006
S012302-07		Spike (S012302-02)	<u>149</u>	0.0300			33		200			4	12/23/10	12/23	LSC-006

Nominal values and limits from method      30.0      0.0100      25      180

PROCEDURES      REFERENCE      906.0\_H3\_LSC  
 CP-210      Tritium in Water Samples by Distillation, rev 11

AVERAGES ± 2 SD      MDA 148 ± 3.02  
 FOR 7 SAMPLES      YIELD 65 ± 89

METHOD SUMMARIES

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**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4474

Test NI L Matrix WATER  
 SDG 7767  
 Contact N. Joseph Verville

**LAB METHOD SUMMARY**

NICKEL-63 IN LIQUID  
 LIQUID SCINTILLATION COUNTING

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4474

**RESULTS**

LAB RAW SUF-  
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7287-006

S012302-01	7767-001	B2B4X1	U
S012302-02	7767-002	B2B4X3	U
S012302-04	7767-004	Lab Control Sample	ok
S012302-05	7767-005	Method Blank	U
S012302-06	7767-006	Duplicate (S012302-01)	- U

Nominal values and limits from method RDLs (pCi/L) 15.0

**METHOD PERFORMANCE**

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

Preparation batch 7287-006 2σ prep error 11.2 % Reference Lab Notebook No. 7287 pg.006

S012302-01	B2B4X1	2.88	0.500	97	50	10	12/28/10	12/29	LSC-007
S012302-02	B2B4X3	2.89	0.500	97	50	10	12/28/10	12/29	LSC-007
S012302-04	Lab Control Sample	2.95	0.500	94	50		12/28/10	12/29	LSC-007
S012302-05	Method Blank	2.94	0.500	96	50		12/28/10	12/29	LSC-007
S012302-06	Duplicate (S012302-01)	2.88	0.500	97	50	10	12/28/10	12/29	LSC-007

Nominal values and limits from method 15.0 0.500 40-110 50 180

PROCEDURES REFERENCE NI63\_LSC  
 SPP-040 Environmental Water Dissolution, rev 2  
 CP-280 Nickel-63 Purification, rev 5

AVERAGES ± 2 SD MDA 2.91 ± 0.068  
 FOR 5 SAMPLES YIELD 96 ± 3

METHOD SUMMARIES

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 Version Ver 1.0  
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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

REPORT GUIDES

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Lab id EBRLNE  
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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

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.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 30

Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
 Contract No. 33677  
 Case no SDG\_H4474

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.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

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).

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
 Contract No. 33677  
 Case no SDG\_H4474

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.

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 12/30/10

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Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

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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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
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Version 3.06  
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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
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REPORT GUIDE

Client CHPRC  
 Contract No. 33677  
 Case no SDG\_H4474

LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG H4474

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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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

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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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
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Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

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Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

MATRIX SPIKE

for the recovery.

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

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

Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.C  
Form DVD-RG  
Version 3.06  
Report date 12/30/1

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
 Contract No. 33677  
 Case no SDG H4474

METHOD SUMMARY

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

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
  - \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- \* Aliquots are underlined if less than the nominal value specified for the method.
  - \* Preparation factors are underlined if greater than the nominal value specified for the method.
  - \* Dilution factors are underlined if greater than the nominal value specified for the method.
  - \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
  - \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
  - \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
 Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
 Contract No. 33677  
 Case no SDG\_H4474

METHOD SUMMARY

- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

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

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

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

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

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

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 12/30/10

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4474

SDG 7767  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4474

METHOD SUMMARY

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

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

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

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

REPORT GUIDES  
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SUMMARY DATA SECTION  
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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/30/10

COLLECTOR <i>Chamberlain</i>		COMPANY CONTACT WIDRIG, DL H4474	TELEPHONE NO. 376-2858 (17767)	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE C01	DATA TURNAROUND 12 Days / 12 Days
SAMPLING LOCATION 600-287-PL EB 1 (Day 1)		PROJECT DESIGNATION 600-287-PL - QC Sampling		SAF NO. F11-040	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-175		FIELD LOGBOOK NO. HNF-N-507-16		COA 302560ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. SEE PTR 0012110 02581		BILL OF LADING/AIR BILL NO. SEE PTR 794246233100		
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=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)	PRESERVATION None 6 Months	HNO3 to pH <2 6 Months	HNO3 to pH <2 6 Months	HNO3 to pH <2 6 Months	HNO3 to pH <2 6 Months
	HOLDING TIME	G/P	G/P	G/P	G/P	G/P
	TYPE OF CONTAINER	1	1	1	1	1
	NO. OF CONTAINER(S)	125ml	1000ml	1L	1L	1L
	VOLUME	TRITIUM - MIDLEVEL (Tribium); Nickel-63 (Nickel-63); Americium-241 (Americium-241);		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS
	SAMPLE ANALYSIS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS Technetium-99 (Technetium-99); Isotopic Thorium (Thorium-232);				
50	SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
55	92BAX1	WATER	12-19-10	0705	X	X

**SPECIAL INSTRUCTIONS**  
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

ORIGINAL

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
<i>Chris Chamberlain</i>	12-19-10/0742	SSU #1	12-17-10 0742
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
SSU-1 0800	DEC 21 2010	SEE Hamaker	0800 DEC 21 2010
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
CHPRC <i>Chris Chamberlain</i>	1/400 DEC 21 2010	FEA EX	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
		FEA EX	12/21/10 1230
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

**CH2M HILL Plateau Remediation Company** **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** **PAGE 1 OF 1**

**COLLECTOR** Chamberlain **COMPANY CONTACT** H4474 **TELEPHONE NO.** 376-2858 (7767) **PROJECT COORDINATOR** WIDRIG, DL **PRICE CODE** C01 **DATA TURNAROUND** 12 Days / 12 Days

**SAMPLING LOCATION** **PROJECT DESIGNATION** 600-287-PL - QC Sampling **FIELD LOGBOOK NO.** **ACTUAL SAMPLE DEPTH** **COA** 302560ES10 **METHOD OF SHIPMENT** FEDERAL EXPRESS

**ICE CHEST NO.** GWS-175 **OFFSITE PROPERTY NO.** 02581 **BILL OF LADING/AIR BILL NO.** 794246233100

**SHIPPED TO** Eberline Services

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME
A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	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)	None	6 Months	P	1	125ml	TRITIUM HDLLEVEL (indam);	12-19-10	0730

SAMPLE NO.	MATRIX*	RECEIVED BY/STORED IN	DATE/TIME
02B44	WATER	SSU-1	12/19/10 8:21
		SEE HANDBOOK	0800 12/21/10
		FED EX	12/21/10 1400
		FED EX	12/22/10 12:20

**CHAIN OF POSSESSION**

**RELINQUISHED BY/REMOVED FROM** GWS Chamberlain **DATE/TIME** 12-19-10/16:21

**RELINQUISHED BY/REMOVED FROM** SSU #1 **DATE/TIME** 0800 12/21/10

**RELINQUISHED BY/REMOVED FROM** CH2M HILL **DATE/TIME** 12/21/10 1400

**RELINQUISHED BY/REMOVED FROM** FED EX **DATE/TIME** 12/22/10 12:20

**RELINQUISHED BY/REMOVED FROM** [Signature] **DATE/TIME** [Signature]

**SPECIAL INSTRUCTIONS**  
 \*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. □\*\* The laboratory shall report only the requested constituents of concern in all final data reports, and EDDs. QC results for non-requested constituents need not be reported, but samples chosen for matrix spike, and all spike compounds shall be identified in the final data report case narrative. No TICs shall be reported. □\*\* Per previous written agreement, the Laboratories shall report all final data for this sampling event on or before December 30, 2010. Contact the Project Coordinator for questions.

**ORIGINAL**

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

CH2M Hill Platteau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-040-008	PAGE 2 OF 2
COLLECTOR	Chamberlain	COMPANY CONTACT	WIDRIG, DL	H4474	376-2858 (7767)
SAMPLING LOCATION	600-287-PL EB 1 (Day 1)	PROJECT DESIGNATION	FIELD LOGBOOK NO.	14NF-N-507-16	ACTUAL SAMPLE DEPTH
ICE CHEST NO.	GWS-175	OFFSITE PROPERTY NO.	SEE PTR	bb 122110 02581	N/A
SHIPPED TO	Eberline Services	PROJECT COORDINATOR	WIDRIG, DL		
		SAF NO.	F11-040		
		COA	302560ES10		
		BILL OF LADING/AIR BILL NO.	SEE PTR	79424623100	
		PRICE CODE	C01		
		AIR QUALITY	<input type="checkbox"/>		DATA TURNAROUND 12 Days / 12 Days
		METHOD OF SHIPMENT	FEDERAL EXPRESS		

**SPECIAL INSTRUCTIONS**

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.  \*\* The laboratory shall report only the requested constituents of concern in all final data reports, and EDDs. QC results for non-requested constituents need not be reported, but samples chosen for matrix spike, and all spike compounds shall be identified in the final data report case narrative. No TICs shall be reported.  \*\* Per previous written agreement, the Laboratories shall report all final data for this sampling event on or before December 30, 2010. Contact the Project Coordinator for questions.

- (1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
- (2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240};
- (3) Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238};
- (4) Strontium-89,90 -- Total Sr {Total beta radiostrontium};

 ORIGINAL

**COLLECTOR**  
Chamberlain

**COMPANY CONTACT**  
WIDRIG, DL H4474

**TELEPHONE NO.**  
376-2858 (7767)

**PROJECT COORDINATOR**  
WIDRIG, DL

**PRICE CODE**  
C01

**DATA TURNAROUND**  
12 Days / 12 Days

**SAMPLING LOCATION**  
600-287-PL FB 1

**PROJECT DESIGNATION**  
600-287-PL - OC Sampling

**SAF NO.**  
F11-040

**AIR QUALITY**

**METHOD OF SHIPMENT**  
FEDERAL EXPRESS

**ICE CHEST NO.**  
GWS-175

**FIELD LOGBOOK NO.**  
HNF-N-507-16

**ACTUAL SAMPLE DEPTH**  
N/A

**COA**  
302560ES10

**BILL OF LADING/AIR BILL NO.**  
SEE PTR 794246233100

**SHIPPED TO**  
Eberline Services

**OFFSITE PROPERTY NO.**  
SEE PRK bb 02581

**PRESERVATION**  
None

**HOLDING TIME**  
6 Months

**TYPE OF CONTAINER**  
P

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

**VOLUME**  
125mL

**SAMPLE ANALYSIS**  
TRITIUM - AQUEOUS (Tritium);  
NICKEL-63 (Nickel-63);  
AMERICIUM-241 (Americium-241);

**SPECIAL HANDLING AND/OR STORAGE**  
WATER

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	HNO3 to pH <2	6 Months	G/P	1	2	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	HCl to pH <2	HNO3 to pH <2	HNO3 to pH <2
A-Air	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)	<2	6 Months	G/P	1	2	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	6 Months	6 Months	6 Months
DL-Drum		<2	6 Months	G/P	1	2	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	6 Months	6 Months	6 Months
DS-Drum		<2	6 Months	G/P	1	2	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	6 Months	6 Months	6 Months
Solids		<2	6 Months	G/P	1	2	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	6 Months	6 Months	6 Months
L-Liquid													
O-Oil													
S-Soil													
SE-Sediment													
T-Tissue													
V-Vegetation													
W-Water													
WI-Wipe													
X-Other													

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
63		12-19-10	1030
62BAX3	WATER		

**CHAIN OF POSSESSION**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Ing Chamberlain	12-19-10/1631	SSU-1	12-19-10/1624
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
SSU #1	0802 DEC 21 2010	SE-Haitman	DEC 21 2010
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
SE-Haitman	DEC 21 2010/140	FEA-EX	DEC 21 2010/120
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FEA-EX	12/21/10	FE-Haitman	12/21/10
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**  
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

**ORIGINAL**

**LABORATORY SECTION**  
RECEIVED BY

**FINAL SAMPLE DISPOSITION**  
DISPOSAL METHOD

**TITLE**

**DATE/TIME**

**DISPOSED BY**

**DATE/TIME**

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-040-010	PAGE 2 OF 2
COLLECTOR <i>Chamberlain</i>	COMPANY CONTACT WIDRIG, DL <i>H4474</i>	TELEPHONE NO. 376-2858 <i>(7767)</i>	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE C01	DATA TURNAROUND 12 Days / 12 Days
SAMPLING LOCATION 600-287-PL FB 1	PROJECT DESIGNATION 600-287-PL - QC Sampling		SAF NO. F11-040	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GWS-175</i>	FIELD LOGBOOK NO. <i>HNF-N-507-16</i>	ACTUAL SAMPLE DEPTH <i>N/A</i>	COA 302560ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Eberline Services	OFFSITE PROPERTY NO. <i>SEE PTR 62581</i>	BILL OF LADING/AIR BILL NO. SEE PTR <i>794246233100</i>			

**SPECIAL INSTRUCTIONS**

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.  \*\* The laboratory shall report only the requested constituents of concern in all final data reports, and EDDs. QC results for non-requested constituents need not be reported, but samples chosen for matrix spike, and all spike compounds shall be identified in the final data report case narrative. No TICs shall be reported.  \*\* Per previous written agreement, the Laboratories shall report all final data for this sampling event on or before December 30, 2010. Contact the Project Coordinator for questions.

- (1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
- (2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240};
- (3) Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238};
- (4) Strontium-89,90 -- Total Sr {Total beta radiostrontium};

 ORIGINAL



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

Client: CHPRC City RICHLAND State WA  
 Date/Time received 12/22/2000 CoC No. F11-040-008,010,011  
 Container I.D. No. 6WS-175 Requested TAT (Days) 12 P.O. Received Yes [ ] No [ ]

### INSPECTION

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

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
 15. Inspected by [Signature] Date 12/22/00 Time: 1200

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
<u>for samples 260</u>							

Ion Chamber Ser. No. \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. 10482

Calibration date \_\_\_\_\_  
 Calibration date \_\_\_\_\_  
 Calibration date 24 SEP 10