

Analytical Data Package Prepared For

RECEIVED
APR 28 2003

Bechtel Hanford**EDMC**

Radiochemical Analysis By

STL Richland*2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.*

Assigned Laboratory Code: STLRL

Data Package Contains 63 Pages

Report No.: 20768

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03852	B01-054	J004L8	J2I170181-1	E8C3M1AE	9E8C3M10	2260472
		J004L8	J2I170181-1	E8C3M1AC	9E8C3M10	2260474
		J004L8	J2I170181-1	E8C3M1AH	9E8C3M10	2260475
		J004L8	J2I170181-1	E8C3M1AD	9E8C3M10	2260476
		J004L8	J2I170181-1		9E8C3M10	2260477
		J004L8	J2I170181-1	E8C3M2AF	9E8C3M20	2289544

THIS PAGE LEFT BLANK
INTENTIONALLY

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
 3350 George Washington Way
 Richland, WA 99352

October 29, 2002

Attention: Joan Kessner

SAF Number	:	B01-054
Date SDG Closed	:	September 17, 2002
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W03852
Data Deliverable	:	21-Day / Summary

I. Introduction

On September 17, 2002, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>STLR ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
E8C3M	J004L8	SOIL	9/17/02

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
 Americium-241 by method RICH-RC-5080
 Plutonium-238, 239/240 by method RICH-RC-5080
 Uranium-234, -235, -238 by method RICH-RC-5079
Gas Proportional Counting
 Total Strontium by method RICH-RC-5006
Gamma Spectroscopy
 Gamma Spec by method RICH-RC-5017
Chemical Analyses
 Chromium Hex by EPA method 7196A

Bechtel Hanford, Inc.
October 29, 2002
Page 2

III. Quality Control

The analytical results for each analysis performed under SDG W03852 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy

Americium-241 by method RICH-RC-5080:

The first analysis batch produced smeared spectra so the batch was re-analyzed. The LCS, batch blank, sample duplicate (J004L8), matrix spike, and sample results are within contractual requirements.

Plutonium-238, 239/240 by method RICH-RC-5080:

The LCS, batch blank, sample duplicate (J004L8), matrix spike, and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:

The LCS, batch blank, sample duplicate (J004L8), and sample results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The LCS, batch blank, sample duplicate (J004L8), and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

At the request of the client the U-238DHP energy lines are at lower abundance, therefore providing erratic recoveries and higher MDA than the CRDL for the LCS. Except as noted, the LCS, batch blank, sample duplicate (J004L8), and sample results are within contractual requirements.

Chemical Analyses

Chromium Hex by EPA method 7196A:

The LCS, batch blank, sample duplicate (J004L8), matrix spike (J004L8), color (J004L8 PbCrO₄) spike, and sample results are within contractual requirements.

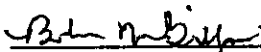
Bechtel Hanford, Inc.

October 29, 2002

Page 3

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

Reviewed and approved:



Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,\dots)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/\sqrt{n}), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u_c the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgrndCnt}/\text{BkgrndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgrndCnt}/\text{BkgrndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 01-Nov-02

STL Richland STLR

Ordered by Client Sample ID, Batch No.

Report No. : 20768

SDG No: W03852

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC MDA	RER
J004L8	E8C3M1AE	PU-238	-3.80E-03 +- 5.4E-03	U	pCi/g	31.86%	5.37E-02	
		PU239/40	2.47E-02 +- 3.4E-02	U	pCi/g	31.86%	5.37E-02	
J004L8	E8C3M1AC	U-234	5.64E-01 +- 2.1E-01		pCi/g	47.64%	3.47E-02	
		U-235	1.28E-02 +- 2.6E-02	U	pCi/g	47.64%	3.47E-02	
		U-238	4.87E-01 +- 1.9E-01		pCi/g	47.64%	3.47E-02	
J004L8	E8C3M1AH	AM-241	1.83E-02 +- 1.9E-02	U	pCi/g		3.10E-02	
		CO-60	3.61E-03 +- 1.0E-02	U	pCi/g		1.83E-02	
		CS-137	8.04E-03 +- 1.2E-02	U	pCi/g		2.01E-02	
		EU-152	8.52E-02 +- 4.5E-02	U	pCi/g		5.33E-02	
		EU-154	1.97E-02 +- 3.3E-02	U	pCi/g		5.84E-02	
		EU-155	3.38E-02 +- 2.7E-02	U	pCi/g		4.58E-02	
		U-238DHP	2.85E-01 +- 2.7E-01	U	pCi/g		2.88E-01	
J004L8	E8C3M1AD	STRONTIUM	9.87E-02 +- 8.1E-02	U	pCi/g	74.10%	1.56E-01	
J004L8	9E8C3M10	HEXCHROME	3.40E+00 +- 0.0E+00		mg/kg	N/A	8.00E-02	
J004L8	E8C3M2AF	AM-241	9.95E-03 +- 1.4E-02	U	pCi/g	88.68%	1.35E-02	
J004L8 DUP	E8C3M1AJ	PU-238	6.44E-03 +- 1.3E-02	U	pCi/g	44.99%	1.75E-02	1.5
		PU239/40	0.00E+00 +- 1.6E-02	U	pCi/g	44.99%	1.75E-02	1.3
J004L8 DUP	E8C3M1AL	U-234	8.49E-01 +- 2.7E-01		pCi/g	49.28%	3.44E-02	1.7
		U-235	0.00E+00 +- 3.1E-02	U	pCi/g	49.28%	3.44E-02	0.6
		U-238	6.92E-01 +- 2.3E-01		pCi/g	49.28%	7.17E-02	1.4
J004L8 DUP	E8C3M1AM	AM-241	-3.06E-02 +- 4.6E-02	U	pCi/g		7.58E-02	2.0
		CO-60	1.35E-02 +- 1.2E-02	U	pCi/g		2.11E-02	1.3
		CS-137	1.32E-02 +- 1.2E-02	U	pCi/g		2.13E-02	0.6
		EU-152	8.84E-02 +- 4.4E-02	U	pCi/g		5.80E-02	0.1
		EU-154	-2.74E-03 +- 3.9E-02	U	pCi/g		6.54E-02	0.9
		EU-155	4.06E-02 +- 3.6E-02	U	pCi/g		6.13E-02	0.3
		U-238DHP	4.11E-01 +- 4.0E-01	U	pCi/g		6.73E-01	0.5
J004L8 DUP	E8C3M1AN	STRONTIUM	7.75E-02 +- 7.3E-02	U	pCi/g	78.80%	1.45E-01	0.4
J004L8 DUP	E8C3M1AQ	HEXCHROME	3.40E+00 +- 0.0E+00		mg/kg	N/A	8.00E-02	
J004L8 DUP	E8C3M2AK	AM-241	0.00E+00 +- 1.1E-02	U	pCi/g	97.70%	1.19E-02	1.1

Number of Results: 30

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchSaSum U Qual - Analyzed for, but the result is less than the Mdc|Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 01-Nov-02

Report No. : 20768

SDG No.: W03852

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
BLANK QC	E8D211AA	PU-238	-1.48E-03 +- 3.0E-03	U	pCi/g	42.16%			3.53E-02
		PU239/40	0.00E+00 +- 1.8E-02	U	pCi/g	42.16%			2.00E-02
BLANK QC	E8D211AD	PU-238	9.33E-03 +- 1.9E-02	U	pCi/g	35.61%			2.53E-02
		PU239/40	1.87E-02 +- 2.7E-02	U	pCi/g	35.61%			2.53E-02
BLANK QC	E8D241AA	U-234	7.25E-02 +- 4.6E-02		pCi/g	87.56%			1.79E-02
		U-235	0.00E+00 +- 1.6E-02	U	pCi/g	87.56%			1.79E-02
		U-238	7.65E-02 +- 4.8E-02		pCi/g	87.56%			3.73E-02
BLANK QC	E8D251AA	AM-241	5.53E-03 +- 3.1E-02	U	pCi/g				4.54E-02
		CO-60	9.99E-03 +- 8.4E-03	U	pCi/g				1.59E-02
		CS-137	-5.01E-03 +- 8.0E-03	U	pCi/g				1.33E-02
		EU-152	-5.54E-03 +- 2.3E-02	U	pCi/g				3.62E-02
		EU-154	-1.19E-02 +- 2.4E-02	U	pCi/g				4.06E-02
		EU-155	6.09E-03 +- 2.0E-02	U	pCi/g				3.47E-02
		U-238DHP	5.56E-01 +- 3.8E-01		pCi/g				4.11E-01
BLANK QC	E8D281AA	STRONTIUM	-1.56E-02 +- 5.7E-02	U	pCi/g	91.50%			1.41E-01
BLANK QC	E8D232AA	AM-241	4.12E-03 +- 1.1E-02	U	pCi/g	82.93%			2.47E-02
LCS	E8D211AC	PU239/40	3.55E+00 +- 7.4E-01		pCi/g	34.38%	102.41%	0.0	4.27E-02
LCS	E8D211AE	PU239/40	3.90E+00 +- 7.3E-01		pCi/g	53.86%	112.57%	0.1	1.66E-02
LCS	E8D241AC	U-234	3.12E+00 +- 6.6E-01		pCi/g	89.96%	95.08%	0.0	1.79E-02
		U-235	1.32E-01 +- 6.4E-02		pCi/g	89.96%	88.12%	-0.1	1.79E-02
		U-238	3.22E+00 +- 6.8E-01		pCi/g	89.96%	93.67%	-0.1	1.79E-02
LCS	E8D251AC	CS-137	2.51E-01 +- 5.9E-02		pCi/g		86.44%	-0.1	4.07E-02
		K-40	2.03E+01 +- 2.6E+00		pCi/g		104.01%	0.0	2.97E-01
		RA-226	1.06E+00 +- 1.7E-01		pCi/g		91.87%	-0.1	7.09E-02
		RA-228	1.87E+00 +- 2.9E-01		pCi/g		99.73%	0.0	1.30E-01
		U-238DHP	2.02E+00 +- 1.9E+00	U	pCi/g		192.30%	0.9	3.09E+00
LCS	E8D281AC	STRONTIUM	1.04E+00 +- 3.0E-01		pCi/g	95.40%	90.66%	-0.1	1.31E-01
LCS	E8D232AC	AM-241	4.10E+00 +- 7.6E-01		pCi/g	94.98%	90.08%	-0.1	1.24E-02
MATRIX SPIK	E8C3M1AP	HEXCHROME	3.58E+01 +- 0.0E+00		mg/kg	N/A	89.60%	-0.1	8.00E-02

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLRchQcSum U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 01-Nov-02

Report No. : 20768

SDG No.: W03852

QC Type	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
LCS	E8D3A1AC	HEXCHROME	3.95E+01 +/- 0.0E+00		mg/L	N/A	98.87%	0.0	2.00E-03
BLANK QC	E8D3A1AA	HEXCHROME	0.00E+00 +/- 0.0E+00	U	mg/L	N/A			2.00E-03

Number of Results: 31

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLRchQcSum U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

FORM I

Date: 01-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J2I170181-1

Report No.: 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8

COC No.: B01-054-010

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8C3M1AE		Report DB ID: 9E8C3M10									
PU-238	-3.80E-03	U	5.4E-03	5.4E-03	5.37E-02	pCi/g	31.86%	-0.07	10/12/02 08:34 p		2.05	PUISO_PLATE_AEA
							1.40E-02	1.00E+00			G	ALP37
PU239/40	2.47E-02	U	3.3E-02	3.4E-02	5.37E-02	pCi/g	31.86%	0.46	10/12/02 08:34 p		2.05	PUISO_PLATE_AEA
							1.40E-02	1.00E+00			G	ALP37
Batch: 2260474	Work Order: E8C3M1AC		Report DB ID: 9E8C3M10									
U-234	5.64E-01		1.7E-01	2.1E-01	3.47E-02	pCi/g	47.64%	(16.2)	10/9/02 10:15 a		1.0	UIISO_IE_PLATE_AE
							1.00E+00	(5.5)			G	ALP1
U-235	1.28E-02	U	2.6E-02	2.6E-02	3.47E-02	pCi/g	47.64%	0.37	10/9/02 10:15 a		1.0	UIISO_IE_PLATE_AE
							1.00E+00	0.99			G	ALP1
U-238	4.87E-01		1.6E-01	1.9E-01	3.47E-02	pCi/g	47.64%	(14.)	10/9/02 10:15 a		1.0	UIISO_IE_PLATE_AE
							1.00E+00	(5.2)			G	ALP1
Ratio U-234/238 = 1.2												
Batch: 2260475	Work Order: E8C3M1AH		Report DB ID: 9E8C3M10									
AM-241	1.83E-02	U	1.9E-02	1.9E-02	3.10E-02	pCi/g		0.59	9/23/02 05:47 p		385.5	GAMMA_GS
								(1.9)			g	GER5\$1
CO-60	3.61E-03	U	1.0E-02	1.0E-02	1.83E-02	pCi/g		0.2	9/23/02 05:47 p		385.5	GAMMA_GS
							5.00E-02	0.7			g	GER5\$1
CS-137	8.04E-03	U	1.2E-02	1.2E-02	2.01E-02	pCi/g		0.4	9/23/02 05:47 p		385.5	GAMMA_GS
							1.00E-01	(1.4)			g	GER5\$1
EU-152	8.52E-02	U	4.5E-02	4.5E-02	5.33E-02	pCi/g		(1.6)	9/23/02 05:47 p		385.5	GAMMA_GS
							1.00E-01	(3.8)			g	GER5\$1

STL Richland MDC|MDA,Lc - Detection, Decision Level based on Instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

FORM I

Date: 01-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J21170181-1

Report No.: 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8

COC No.: B01-054-010

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
EU-154	1.97E-02	U	3.3E-02	3.3E-02	5.84E-02	pCi/g		0.34 (1.2)	9/23/02 05:47 p		385.5 g	GAMMA_GS GER5\$1
EU-155	3.38E-02	U	2.7E-02	2.7E-02	4.58E-02	pCi/g	1.00E-01	0.74 (2.5)	9/23/02 05:47 p		385.5 g	GAMMA_GS GER5\$1
U-238DHP	2.85E-01	U	2.7E-01	2.7E-01	2.88E-01	pCi/g	1.00E-01	0.99 (2.1)	9/23/02 05:47 p		385.5 g	GAMMA_GS GER5\$1
Batch: 2260476	Work Order: E8C3M1AD				Report DB ID: 9E8C3M10							
STRONTIUM	9.87E-02	U	7.7E-02	8.1E-02	1.56E-01	pCi/g	74.10%	0.63 (2.4)	10/3/02 07:00 p		5.99 G	SRTOT_SEP_PRECIP GPC31A
Batch: 2260477	Work Order:				Report DB ID: 9E8C3M10							
HEXCHROME	3.40E+00			0.0E+00	8.00E-02	mg/kg	N/A	(42.5) N/A	10/5/02		2.5 G	EPA7196
Batch: 2289544	Work Order: E8C3M2AF				Report DB ID: 9E8C3M20							
AM-241	9.95E-03	U	1.4E-02	1.4E-02	1.35E-02	pCi/g	88.68%	0.74 (1.4)	10/26/02 10:37 a		2.01 G	AMCMISO_EIE_PLT_ ALP121

Number of Results: 15

Comments:

FORM II

Date: 01-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J21170181-1

Report No.: 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8 DUP

COC No.: B01-054-010

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8C3M1AJ			Report DB ID: E8C3M1JR		Orig Sa DB ID: 9E8C3M10						
PU-238	6.44E-03	U	1.3E-02	1.3E-02	1.75E-02	pCi/g	44.99%	0.37	10/12/02 08:34 p		2.03	UIISO_PLATE_AEA
	-3.80E-03	U RER	1.5			1.00E+00		1.			G	ALP38
PU239/40	0.00E+00	U	0.0E+00	1.6E-02	1.75E-02	pCi/g	44.99%	0.	10/12/02 08:34 p		2.03	UIISO_PLATE_AEA
	2.47E-02	U RER	1.3			1.00E+00		0.			G	ALP38
<i>Alpha Spec Result Sum = 6.4E-03</i>												
Batch: 2260474	Work Order: E8C3M1AL			Report DB ID: E8C3M1LR		Orig Sa DB ID: 9E8C3M10						
U-234	8.49E-01		2.1E-01	2.7E-01	3.44E-02	pCi/g	49.28%	(24.7)	10/9/02 10:16 a		0.99	UIISO_IE_PLATE_AE
	5.64E-01	RER	1.7			1.00E+00		(6.3)			G	ALP2
U-235	0.00E+00	U	0.0E+00	3.1E-02	3.44E-02	pCi/g	49.28%	0.	10/9/02 10:16 a		0.99	UIISO_IE_PLATE_AE
	1.28E-02	U RER	0.6			1.00E+00		0.			G	ALP2
U-238	6.92E-01		1.9E-01	2.3E-01	7.17E-02	pCi/g	49.28%	(9.7)	10/9/02 10:16 a		0.99	UIISO_IE_PLATE_AE
	4.87E-01	RER	1.4			1.00E+00		(5.9)			G	ALP2
<i>Ratio U-234/238 = 1.2</i>												
<i>Alpha Spec Result Sum = 1.5E+00</i>												
Batch: 2260475	Work Order: E8C3M1AM			Report DB ID: E8C3M1MR		Orig Sa DB ID: 9E8C3M10						
AM-241	-3.06E-02	U	4.6E-02	4.6E-02	7.58E-02	pCi/g		-0.4	9/25/02 08:28 p		385.5	GAMMA_GS
	1.83E-02	U RER	2.0					-(1.3)			g	GER1\$1
CO-60	1.35E-02	U	1.2E-02	1.2E-02	2.11E-02	pCi/g		0.64	9/25/02 08:28 p		385.5	GAMMA_GS
	3.61E-03	U RER	1.3			5.00E-02		(2.3)			g	GER1\$1
CS-137	1.32E-02	U	1.2E-02	1.2E-02	2.13E-02	pCi/g		0.62	9/25/02 08:28 p		385.5	GAMMA_GS
	8.04E-03	U RER	0.6			1.00E-01		(2.2)			g	GER1\$1
EU-152	8.84E-02	U	4.4E-02	4.4E-02	5.80E-02	pCi/g		(1.5)	9/25/02 08:28 p		385.5	GAMMA_GS
	8.52E-02	U RER	0.1			1.00E-01		(4.1)			g	GER1\$1

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

rptSTLRchDupV3.9 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

5 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 01-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J21170181-1

Report No.: 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8 DUP

COC No.: B01-054-010

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
EU-154	-2.74E-03	U	3.9E-02	3.9E-02	6.54E-02	pCi/g		-0.04	9/25/02 08:28 p		385.5	GAMMA_GS
	1.97E-02	U RER	0.9			1.00E-01		-0.14			g	GER1\$1
EU-155	4.06E-02	U	3.6E-02	3.6E-02	6.13E-02	pCi/g		0.66	9/25/02 08:28 p		385.5	GAMMA_GS
	3.38E-02	U RER	0.3			1.00E-01		(2.2)			g	GER1\$1
U-238DHP	4.11E-01	U	4.0E-01	4.0E-01	6.73E-01	pCi/g		0.61	9/25/02 08:28 p		385.5	GAMMA_GS
	2.85E-01	U RER	0.5					(2.)			g	GER1\$1
Batch: 2260476	Work Order: E8C3M1AN			Report DB ID: E8C3M1NR		Orig Sa DB ID: 9E8C3M10						
STRONTIUM	7.75E-02	U	7.0E-02	7.3E-02	1.45E-01	pCi/g	78.80%	0.54	10/3/02 07:00 p		6.03	SRTOT_SEP_PRECIP
	9.87E-02	U RER	0.4					(2.1)			G	GPC31B
Batch: 2260477	Work Order:			Report DB ID: E8C3M1AQ		Orig Sa DB ID: 9E8C3M10						
HEXCHROME	3.40E+00			0.0E+00	8.00E-02	mg/kg	N/A	(42.5)	10/5/02		2.5	EPA7196
	3.40E+00	RPD	0.0					N/A			G	
Batch: 2289544	Work Order: E8C3M2AK			Report DB ID: E8C3M2KR		Orig Sa DB ID: 9E8C3M20						
AM-241	0.00E+00	U	0.0E+00	1.1E-02	1.19E-02	pCi/g	97.70%	0.	10/26/02 10:37 a		2.02	AMCMISO_EIE_PLT_
	9.95E-03	U RER	1.1			1.00E+00		0.			G	ALP123

Number of Results: 15

Comments:

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPuD))] as defined by ICPT BOA.
 rptSTLRchDupV3.9 MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 5 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 01-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-472

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8D211AA		Report DB ID: E8D211AB									
PU-238	-1.48E-03	U	3.0E-03	3.0E-03	3.53E-02	pCi/g	42.16%	-0.04	10/12/02 08:34 p		2.0	PUISO_PLATE_AEA
					7.67E-03	1.00E+00		-1.			G	ALP39
PU239/40	0.00E+00	U	0.0E+00	1.8E-02	2.00E-02	pCi/g	42.16%	0.	10/12/02 08:34 p		2.0	PUISO_PLATE_AEA
						1.00E+00		0.			G	ALP39
Batch: 2260472	Work Order: E8D211AD		Report DB ID: E8D211DX									
PU-238	9.33E-03	U	1.9E-02	1.9E-02	2.53E-02	pCi/g	35.61%	0.37	10/12/02 08:35 p		1.97	PUISO_PLATE_AEA
						1.00E+00		1.			G	ALP43
PU239/40	1.87E-02	U	2.6E-02	2.7E-02	2.53E-02	pCi/g	35.61%	0.74	10/12/02 08:35 p		1.97	PUISO_PLATE_AEA
						1.00E+00		(1.4)			G	ALP43

Number of Results: 4

Comments:

FORM II
BLANK RESULTS

Date: 01-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-473

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2289544	Work Order: E8D232AA			Report DB ID: E8D232AB								
AM-241	4.12E-03	U	1.0E-02	1.1E-02	2.47E-02	pCi/g	82.93%	0.17	10/26/02 10:37 a		2.0	AMCMISO_EIE_PLT_
					5.36E-03	1.00E+00		0.78			G	ALP124

Number of Results: 1

Comments:

16

FORM II
BLANK RESULTS

Date: 01-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-474

SDG: W03852
Report No.: 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260474	Work Order: E8D241AA		Report DB ID: E8D241AB									
U-234	7.25E-02		4.4E-02	4.6E-02	1.79E-02	pCi/g	87.56%	(4.1)	10/9/02 10:16 a		1.0	UIISO_IE_PLATE_AE
						1.00E+00		(3.2)			G	ALP3
U-235	0.00E+00	U	0.0E+00	1.6E-02	1.79E-02	pCi/g	87.56%	0.	10/9/02 10:16 a		1.0	UIISO_IE_PLATE_AE
						1.00E+00		0.			G	ALP3
U-238	7.65E-02		4.6E-02	4.8E-02	3.73E-02	pCi/g	87.56%	(2.1)	10/9/02 10:16 a		1.0	UIISO_IE_PLATE_AE
					9.70E-03	1.00E+00		(3.2)			G	ALP3

Ratio U-234/238 = 0.9

Number of Results: 3

Comments:

FORM II

Date: 01-Nov-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J21170000-475

Report No.: 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260475	Work Order: E8D251AA		Report DB ID: E8D251AX									
AM-241	5.53E-03	U	3.1E-02	3.1E-02	4.54E-02	pCi/g		0.12	9/24/02 07:00 p		348.0	GAMMA_GS
								0.35			g	GER1\$1
CO-60	9.99E-03	U	8.4E-03	8.4E-03	1.59E-02	pCi/g		0.63	9/24/02 07:00 p		348.0	GAMMA_GS
								(2.4)			g	GER1\$1
CS-137	-5.01E-03	U	8.0E-03	8.0E-03	1.33E-02	pCi/g		-0.38	9/24/02 07:00 p		348.0	GAMMA_GS
								(-1.3)			g	GER1\$1
EU-152	-5.54E-03	U	2.3E-02	2.3E-02	3.62E-02	pCi/g		-0.15	9/24/02 07:00 p		348.0	GAMMA_GS
								-0.49			g	GER1\$1
EU-154	-1.19E-02	U	2.4E-02	2.4E-02	4.06E-02	pCi/g		-0.29	9/24/02 07:00 p		348.0	GAMMA_GS
								-0.99			g	GER1\$1
EU-155	6.09E-03	U	2.0E-02	2.0E-02	3.47E-02	pCi/g		0.18	9/24/02 07:00 p		348.0	GAMMA_GS
								0.6			g	GER1\$1
U-238DHP	5.56E-01		3.8E-01	3.8E-01	4.11E-01	pCi/g		(1.4)	9/24/02 07:00 p		348.0	GAMMA_GS
								(2.9)			g	GER1\$1

Number of Results: 7

Comments:

FORM II

Date: 01-Nov-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170000-476

Report No.: 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2260476	Work Order: E8D281AA		Report DB ID: E8D281AB									
STRONTIUM	-1.56E-02	U	5.7E-02	5.7E-02	1.41E-01	pCi/g	91.50%	-0.11	10/3/02 07:00 p		6.0	SRTOT_SEP_PRECIP
					6.55E-02			-0.54			G	GPC31C

Number of Results: 1

Comments:

19

FORM II
BLANK RESULTS

Date: 01-Nov-02

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170181-

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260477	Work Order:			Report DB ID: E8D3A1AA								
HEXCHROME	0.00E+00	U		0.0E+00	2.00E-03	mg/L	N/A	0. N/A	10/5/02		100.0 ML	EPA7196

Number of Results: 1

Comments:

20

FORM II
LCS RESULTS

Date: 01-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J21170000-472

SDG: W03852
Report No.: 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8D211AC		Report DB ID: E8D211CS										
PU239/40	3.55E+00		3.6E-01	7.4E-01	4.27E-02	pCi/g	34.38%	3.46E+00	1.7E-01	102.41%	10/12/02 08:35 p	2.0	PUISO_PLATE_AEA
							Rec Limits:	70.	130.	0.0		G	ALP41
Batch: 2260472	Work Order: E8D211AE		Report DB ID: E8D211EM										
PU239/40	3.90E+00		3.1E-01	7.3E-01	1.66E-02	pCi/g	53.86%	3.46E+00	1.7E-01	112.57%	10/12/02 08:36 p	2.0	PUISO_PLATE_AEA
							Rec Limits:	70.	130.	0.1		G	ALP47

Number of Results: 2

Comments:

FORM II
LCS RESULTS

Date: 01-Nov-02

Lab Name: **STL Richland**
Lot-Sample No.: **J2I170000-473**

SDG: **W03852**
Report No. : **20768**

Matrix: **SOIL**

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2289544	Work Order: E8D232AC		Report DB ID: E8D232CS										
AM-241	4.10E+00		2.7E-01	7.6E-01	1.24E-02	pCi/g	94.98%	4.55E+00	1.3E-01	90.08%	10/26/02 10:37 a	2.0	AMCMISO_EIE_PLT_
							Rec Limits:	70.	130.	-0.1		G	ALP127

Number of Results: 1

Comments:

22

FORM II
LCS RESULTS

Date: 01-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-474

SDG: W03852
Report No.: 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA)	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2260474	Work Order: E8D241AC		Report DB ID: E8D241CS										
U-234	3.12E+00		2.9E-01	6.6E-01	1.79E-02	pCi/g	89.96%	3.28E+00	2.0E-02	95.08%	10/9/02 10:16 a	1.0	UIISO_IE_PLATE_AE
							Rec Limits:	70.	130.	0.0		G	ALP4
U-235	1.32E-01		5.9E-02	6.4E-02	1.79E-02	pCi/g	89.96%	1.50E-01	9.0E-04	88.12%	10/9/02 10:16 a	1.0	UIISO_IE_PLATE_AE
							Rec Limits:	70.	130.	-0.1		G	ALP4
U-238	3.22E+00		2.9E-01	6.8E-01	1.79E-02	pCi/g	89.96%	3.43E+00	2.1E-02	93.67%	10/9/02 10:16 a	1.0	UIISO_IE_PLATE_AE
							Rec Limits:	70.	130.	-0.1		G	ALP4

Number of Results: 3

Comments:

FORM II
LCS RESULTS

Date: 01-Nov-02

Lab Name: **STL Richland**
Lot-Sample No.: **J2I170000-475**

SDG: **W03852**
Report No. : **20768**

Matrix: **SOIL**

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260475		Work Order: E8D251AC			Report DB ID: E8D251CM								
CS-137	2.51E-01		5.9E-02	5.9E-02	4.07E-02	pCi/g		2.90E-01	1.3E-02	86.44%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	-0.1		g	GER2\$1
K-40	2.03E+01		2.6E+00	2.6E+00	2.97E-01	pCi/g		1.95E+01	1.9E+00	104.01%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER2\$1
RA-226	1.06E+00		1.7E-01	1.7E-01	7.09E-02	pCi/g		1.15E+00	5.2E-02	91.87%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	-0.1		g	GER2\$1
RA-228	1.87E+00		2.9E-01	2.9E-01	1.30E-01	pCi/g		1.87E+00	9.6E-02	99.73%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER2\$1
24 U-238DHP	2.02E+00	U	1.9E+00	1.9E+00	3.09E+00	pCi/g		1.05E+00	5.4E-02	192.30%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:			0.9		g	GER2\$1

Number of Results: 5

Comments:

FORM II
LCS RESULTS

Date: 01-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-476

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2260476	Work Order: E8D281AC		Report DB ID: E8D281CS										
STRONTIUM	1.04E+00		1.3E-01	3.0E-01	1.31E-01	pCi/g	95.40%	1.15E+00	2.3E-02	90.66%	10/3/02 07:00 p	6.0	SRTOT_SEP_PRECIP
							Rec Limits:	70.	130.	-0.1		G	GPC31D

Number of Results: 1

Comments:

25

FORM II
LCS RESULTS

Date: 01-Nov-02

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170181-

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260477	Work Order:		Report DB ID: E8D3A1AC										
HEXCHROME	3.95E+01			0.0E+00	2.00E-03	mg/L	N/A	4.00E+01		98.87%	10/5/02	100.0	EPA7196
							Rec Limits:			0.0		ML	

Number of Results: 1

Comments:

FORM II

Date: 01-Nov-02

MATRIX SPIKE RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170181-1

Report No. : 20768

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2260477	Work Order:			Report DB ID: E8C3M1AP		Orig Sa DB ID: 9E8C3M10							
HEXCHROME	3.58E+01			0.0E+00	8.00E-02	mg/kg	N/A	89.60%	3.99E+01		10/5/02	2.5	EPA7196
	3.40E+00	RPD	1.7									G	

Number of Results: 1

Comments:

SKS 11/19/02
269

P

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2 I170187
 Client ID: 1981a BHE
 Due Date: 1981a
 QC Batch Number: 2789544
 Method Test Parameter: SK-AM
 Matrix: Soil
 SDG Number: NA W03854-3852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: QC spectra of results ok J06430

First Level Review: Paw Anderson

Date: 10.28.02



STL

Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 2289544

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: Rept Renel

Second Level Review: [Signature] Date: 10/29/02

Clouseau Nonconformance Memo



NCM #: J06430	Classification: Anomaly
NCM Initiated By: Pam Anderson	Status: QAREVIEW
Date Opened: 10/28/02	Production Area: Environmental - Sep
Date Closed: N/A	Tests: Amlso by ALP
Nonconformance: Other (describe in detail)	Lot #'s (Sample #'s): J21170000 (473); J21170181 (1)
Subcategory: Other (explanation required)	QC Batch: 2289544

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	10/28/02	QC ROI spectra smeared. Whole batch was rerun. Rerun data good. Data accepted.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	10/28/02	Samples rerun. Will watch for a trend.

Approval History

Name	Date Approved:	Position
Pam Anderson	10/28/02	

Data Review Checklist
RADIOCHEMISTRY
First Level Review

P

Lot Number: J2 IDU187
 Client ID: BHS
 Due Date: 10/18/02
 QC Batch Number: 2000472
 Method Test Parameter: SD-PH
 Matrix: SOIL
 SDG Number: WD3882

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?	✓		
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?			✓
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: Preston Smith

Date: 10/14/02



STL

Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 2260472

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?	✓		
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: *[Signature]* Date: 10/14/02

Data Review Checklist
RADIOCHEMISTRY
First Level Review

P

Lot Number: J2I17J11A
 Client ID: BHF
 Due Date: 10/8/02
 QC Batch Number: 2260474 (0974)
 Method Test Parameter: SR-61250
 Matrix: SOIL
 SDG Number: _____

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?			✓
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: Preston Smith Date: 10/10/02



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260474

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: [Signature]

Date: 14/11/02

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2I170181
 Client ID: BHE
 Due Date: 10-8-02
 QC Batch Number: 2260475
 Method Test Parameter: GAMM
 Matrix: Soil
 SDG Number: w03852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓	✓	
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓	✓	
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?			✓
E. Other			
1. Are all Nonconformances included and noted? <u>J06205</u>	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: Eu-152 identification rejected by Abundance

CRITERIA.

First Level Review: [Signature] Date: 9-29-02

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260475

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓	✓	
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?	✓		✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: Dup in results of sample
U-238 dup out of limits
U-238 PHP @ lower abundance; write reasons

Second Level Review: John M. Dillner Date: 9/29/02

Clouseau Nonconformance Memo



NCM #: J06205	Classification: Anomaly
NCM Initiated By: Dale OConnell	Status: QAREVIEW
Date Opened: 09/29/02	Production Area: Environmental - Prep
Date Closed: N/A	Tests: Gamma by GER
Nonconformance: Insufficient sample volume for QC	Lot #'s (Sample #'s): J2I170000 (475); J2I170181 (1)
Subcategory: Insufficient sample volume to prepare MS/MSD or duplicate	QC Batch: 2260475

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Dale OConnell	09/29/02	There was insufficient sample volume provided to prepare a duplicate. U-238DHP accuracy out of limits. Client requested U-238DHP at lower abundance therefore erratic recoveries and higher MDA.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Dale OConnell	09/29/02	Precision determination achieved by recounting sample on a different detector. Report results.

Approval History

<u>Name</u>	<u>Date Approved:</u>	<u>Position</u>
Dale OConnell	09/29/02	

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: JZF 170187 P
 Client ID: BHE
 Due Date: 10/8/02
 QC Batch Number: 2260476
 Method Test Parameter: TH TSR
 Matrix: Soil
 SDG Number: W03852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?			✓
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: Pam Anderson Date: 10-4-02



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260476

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Bob M. [Signature] Date: 10/6/02

SEVERN**TRENT****SERVICES**

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): F8C3M

BATCH# 2260477

Lab Sample Numbers or SDG: W83852

LOT# J21170181

Method/Test/Parameter: CR+6 IN SOIL

RICHMC 5005 R6

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters \leq reporting limit?	✓			✓
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results \leq reporting limit?	✓			✓
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
D. QC Samples				
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	✓
5. ICP only: One serial dilution performed per SDG?			✓	✓
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	✓
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	✓

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted?			✓	✓
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response:

C.) PbCrO4 SPIKE OF E8C3MVA REQUIRED X 20 DILUTION.

Analyst: SM. FALCO

Date: 10/15/02

Second-Level Review: W.E. P...

Date: 10-17-02



STL

Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 2260477

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?			✓
3. Are the correct isotopes reported?			✓
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?			✓
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?			✓
8. Do the MS/MSD results and yields meet acceptance criteria?	✓		
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: John M. Dwyer

Date: 10/17/02

CHAIN OF CUSTODY

W-21058

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B01-054-010	Page 1 of 1
Collector D.Shea/R.Nielson		Company Contact D.Shea		Telephone No. 521-6014		Project Coordinator KESSNER, JH	
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location pipelines campaign 2 verification		SAF No. B01-054		Price Code 8L Data Turnaround 21 Days	
Ice Chest No. ERC 97-029		Field Logbook No. EL-1548-2		COA R100BC2600		Method of Shipment Government Vehicle	
Shipped To Sewern Trent Incorporated, Richland		Offsite Property No. NA		Bill of Lading/Air Bill No. NA			

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially radiologically contaminated Tie to J003M7 Special Handling and/or Storage Cool 4°C	Preservation	Cool 4C	Cool 4C	None	None	None						
	Type of Container	G/P	G/P	G/P	G/P	G/P						
	No. of Container(s)	1	1	1	1	1						
	Volume	250mL	60mL	500mL	60mL	20mL						

SDG W03852 SAMPLE ANALYSIS True 10-8 J2I170181				ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Activity Scan					
Sample No.	Matrix *	Sample Date	Sample Time										
J004LB E803M	SOIL	9/16/02	1450	✓	✓	✓	✓	✓					
J004L9	SOIL	9/15/02											

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) (2) Isotopic Plutonium, Isotopic Uranium; Americium-241; Strontium-89,90 - Total Sr, Nickel-63 PWS 9/13/02 Tie to J003M7 Personnel not available to relinquish samples from the 3728 Ref # 1A on 9/17/02
PWShea PWShea		9/16/02 1645		Fridge 1A		9/16/02 1645		
K. F. 1A 3728		9-17-02 1000		K. F. 1A 3728		9-17-02 1000		
K. F. 1A 3728		9-17-02 1048		STL 4004A Rhineheart		9-17-02 10:18		
K. F. 1A 3728		9-17-02		K. F. 1A 3728		9-17-02		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
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

EBERLINE SERVICES / RICHMOND
 SAMPLE DELIVERY GROUP H1892

R208137-19

J003M7

DATA SHEET

SDG <u>7342</u>	Client/Case no <u>Hanford</u>	SDG <u>H1892</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R208137-19</u>	Client sample id <u>J003M7</u>	
Dept sample id <u>7342-019</u>	Location/Matrix <u>Campaign 2 Variance</u>	<u>SOLID</u>
Received <u>08/28/02</u>	Collected/Weight <u>08/26/02 09:48</u>	<u>1058 g</u>
% solids <u>100.0</u>	Custody/SAF No: <u>B01-052-123</u>	<u>B01-052</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TRST
Cobalt 60	10198-40-0	U		<u>0.092</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.099	0.045	0.058	0.10	J	GAM
Europium 152	14683-23-9	1.15	0.18	<u>0.16</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.23</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.20</u>	0.10	U	GAM
Americium 241	14596-10-2	U		0.48		U	GAM

100 B/C Area Effluent Pipe. & Prox.

*Rad Screen for Campaign II verification
 See B01-054-009 & 010*

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>1.05</u>
Report date <u>09/09/02</u>

Sample Check-in List

Date/Time Received: 9/17/02 @ 10:18 AR
 Client: BHI SDG #: 2W03852 NA [] SAF #: 801-054 NA []
 Work Order Number: J2I7018 JH 9-17-02 Chain of Custody # 801-054-010
 Shipping Container ID: AT ERC97-07A Air Bill # N/A
AR 9/17/02

1. Custody Seals on shipping container intact? NA [] Yes No []
2. Custody Seals dated and signed? NA [] Yes No []
3. Chain of Custody record present? Yes No []
4. Cooler temperature: 4°C NA [] 5. Vermiculite/packing materials is NA [] Wet [] Dry
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? NA Yes [] No []
8. Samples have:
 - tape hazard labels
 - custody seals appropriate samples labels
9. Samples are:
 - in good condition leaking
 - broken have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA pH < 2 [] pH > 2 []
11. Sample Location, Sample Collector Listed? * Yes No []
 *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [] No
13. Description of anomalies (include sample numbers): _____

Sample Custodian: Richard Lead / Richard Date: 9/17/02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

**SEVERN
TRENT**

STL

P

PRIORITY

*** RE-ANALYSIS REQUEST ***

DUE DATE 10/8/02

CUSTOMER BH1

ANALYSIS Am/Am Am

MATRIX Soil

LOT NUMBER J2E 170 181

SAMPLE DELIVERY GROUP W03852

OLD BATCH NUMBER 2260473

NEW BATCH NUMBER 2289544

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) E8C3M1AF	
2) E8C3M1AK	
3) E8D231AA	
4) E8D231AC	
5) E8D231AD	
6) E8D231AE	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	
LAB QC ID	Assigned with new batch.

10/18/02 3:17:26 PM

Sample Preparation/Analysis

Balance Id:1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

6I PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5013/RC5019
SX Americium-241 by Alpha Spec
5I CLIENT: HANFORD

PRIORITY

Pipet #: *NA*

Sep1 DT/Tm Tech: *NA*

Report Due: 10/08/2002

Sep2 DT/Tm Tech: *NA*

Batch: 2289544 SOIL pCi/g PM, Quote: BG1, 27038

Prep Tech: WAGNERJ

SEQ Batch, Test: 2260472, 6ISO 2260472, 6ISO 2260477 DWEA, 2260478 88OV, 2289544 6ISX, All Tests: 2260472 6ISO, 2260473 6ISX, 2260474 7SSR, 2260475 AXTA, 2260476 CHTH,

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Ini/Date
1 E8C3M-2-AF J21170181-1-SAMP	2.01g,in		AMTC1280 09/23/02 08/08/02.r		200			
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML	#Containers: 4				Scr Rst:	Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
2 E8C3M-2-AK-X J21170181-1-DUP	2.02g,in		AMTC1281 09/23/02 08/08/02.r					
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML	#Containers: 4				Scr Rst:	Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
3 E8D23-2-AA-B J21170000-473-BLK	2.0g,in		AMTC1282 09/23/02 08/08/02.r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
4 E8D23-2-AC-C I21170000-473-LCS	2.0g,in		AMSJ0146 07/27/02 02/05/02.r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
5 E8D23-2-AD-BX 21170000-473-MBLK	2.0g,in		AMTC1283 09/23/02 08/08/02.r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
6 E8D23-2-AE-CM 21170000-473-MLCS	1.97g,in		AMSJ0150 10/13/02 08/08/02.r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:

47

10/28/02 1:16:39 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/28/02, 10/29/02, Batch: '2289544', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2289544				
AC	CalcC	WAGNERJ	10/17/02 4:52:35 PM	
SC		OConnellD	isBatched	10/16/02 5:05:05 PM
SC		WAGNERJ	InPrep2	10/17/02 4:52:35 PM
SC		WAGNERJ	InPrep2	10/17/02 4:52:57 PM
SC		WAGNERJ	Prep2C	10/21/02 3:42:00 PM
SC		HAMMERL	InSep1	10/23/02 3:07:12 PM
SC		DOWNEYS	Sep2C	10/26/02 3:55:01 AM
SC		BlackCL	InCnt1	10/26/02 8:10:05 AM
SC		BlackCL	CalcC	10/26/02 2:31:30 PM
AC		WAGNERJ	10/17/02 4:52:57 PM	ICOC_RADCALC v4.5.3.2
AC		WAGNERJ	10/21/02 3:42:00 PM	RICH-RC-5013 REVISION 4
AC		HAMMERL	10/23/02 3:07:12 PM	RICH-RC-5019 REVISION 2
AC		DOWNEYS	10/26/02 3:55:01 AM	RICH-RC-5019 REVISION 2
AC		BlackCL	10/26/02 8:10:05 AM	RICH-RC-5080 REVISION 1
AC		BlackCL	10/26/02 2:31:30 PM	RICH-RC-5003 REVISION 4
AC		BlackCL	10/26/02 2:31:30 PM	RICH-RD-0008 REVISION 2

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

10/3/02 9:25:29 AM

Sample Preparation/Analysis

Balance Id:1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

6l PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)
SO Plutonium-238,239/40 by Alpha Spec
5l CLIENT: HANFORD

PRIORITY
Net #: NA
Sep1 DT/Tm Tech: NA

Report Due: 10/08/2002 W03852

Batch: 2260472 SOIL pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech: NA

SEQ Batch, Test: 2260473, 6ISX 2260473, 6ISX

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AE J2I170181-1-SAMP	2.05g,in		PATB2499 09/13/02 09/10/02,r		200			
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML	#Containers: 4				Scr Rst:	Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
2 E8C3M-1-AJ-X J2I170181-1-DUP	2.03g,in		PATB2500 09/13/02 09/10/02,r					
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML	#Containers: 4				Scr Rst:	Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
3 E8D21-1-AA-B J2I170000-472-BLK	2.0g,in		PATB2501 09/13/02 09/10/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
4 E8D21-1-AC-C J2I170000-472-LCS	2.0g,in		PUSK0496 09/20/02 05/31/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
5 E8D21-1-AD-BX J2I170000-472-MBLK	1.97g,in		PATB2502 09/13/02 09/10/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
6 E8D21-1-AE-CM J2I170000-472-MLCS	2.0g,in		PUSK0497 09/20/02 05/31/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:

50

10/14/2002 10:29:29 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/14/2002, 10/15/2002, Batch: '2260472', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2260472				
AC	Rev1C	BELSITOB	9/19/2002 12:45:12	
SC		WagarR	IsBatched 9/17/2002 5:33:06 PM	ICOC_RADCALC v4.5.3.2
SC		BELSITOB	InPrep 9/19/2002 12:45:12 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C 9/23/2002 10:52:30 AM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	InPrep2 9/30/2002 1:15:38 PM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	InPrep2 9/30/2002 1:16:08 PM	RICH-RC-5019 REVISION 2
SC		WAGNERJ	Prep2C 10/4/2002 1:12:11 PM	RICH-RC-5019 REVISION 2
SC		HAMMERL	InSep1 10/6/2002 8:01:59 AM	RICH-RC-5080 REVISION 0
SC		ThompsonJ	InSep1 10/10/2002 1:31:26 PM	RICH-RC-5080 REVISION 0
SC		ThompsonJ	Sep1C 10/11/2002 4:31:00 PM	RICH-RC-5080 REVISION 0
SC		DOWNEYS	InSep2 10/12/2002 4:41:56 AM	RICH-RC-5039 REVISION 3
SC		DOWNEYS	Sep2C 10/12/2002 12:02:34 PM	RICH-RC-5039 REVISION 3
SC		IOVINC	InCnt1 10/12/2002 2:09:19 PM	RICH-RD-0008 REVISION 2
SC		BlackCL	CalcC 10/14/2002 6:55:08 AM	RICH-RD-0008 REVISION 2
SC		SMITHP	Rev1C 10/14/2002 10:28:11 AM	RICH-RC-0002 REVISION 5
AC		BELSITOB	9/23/2002 10:52:30	
AC		WAGNERJ	9/30/2002 1:15:38 PM	
AC		WAGNERJ	9/30/2002 1:16:08 PM	
AC		WAGNERJ	10/4/2002 1:12:11 PM	
AC		HAMMERL	10/6/2002 8:01:59	
AC		ThompsonJ	10/10/2002 1:31:26	
AC		ThompsonJ	10/11/2002 4:31:00	
AC		DOWNEYS	10/12/2002 4:41:56	
AC		DOWNEYS	10/12/2002 12:02:34	
AC		IOVINC	10/12/2002 2:09:19	
AC		BlackCL	10/14/2002 6:55:08	
AC		SMITHP	10/14/2002 10:28:11	

AC: Accepting Entry; SC: Status Change

127642, BECHTEL HANFORD, INC. 7S Uiso PrpRC5013/RC5019, SepRC5079(5039) Pipet #: _____
 Bechtel Hanford, Inc. SR Uranium-234,235,238 by Alpha Spec

PRIORITY

Report Due: 10/08/2002 SI CLIENT: HANFORD Sep1 DT/Tm Tech: _____

Batch: 2260474 SOIL pCi/g PM, Quote: BG1, 27038 Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None W03852 Prep Tech: WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AC J21170181-1-SAMP		1.0g,in	UITC7900 09/19/02 05/22/02.r		200			
09/16/2002 14:50						Scr Rst: Alpha: 2.41E+01 pCi/g		Beta: 2.44E+01 pCi/g
2 E8C3M-1-AL-X J21170181-1-DUP		0.99g,in	UITC7901 09/19/02 05/22/02.r					
09/16/2002 14:50						Scr Rst: Alpha: 2.41E+01 pCi/g		Beta: 2.44E+01 pCi/g
3 E8D24-1-AA-B J21170000-474-BLK		1.0g,in	UITC7902 09/19/02 05/22/02.r					
09/16/2002 14:50						Scr Rst: Alpha:		Beta:
4 E8D24-1-AC-C J21170000-474-LCS		1.0g,in	UISH0149 09/18/02 09/24/01.r					
09/16/2002 14:50						Scr Rst: Alpha:		Beta:

Comments: Samples were muffled. 2 10-3-02
 converted samples 3x with can fill. 2 10-4-02

11 Clients for Batch: 127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. BG1, 27038

8C3M1AC-SAMP Constituent List:											
U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:
8D241AA-BLK:											
U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:

10/3/02 9:20:30 AM

Sample Preparation/Analysis

Balance Id:11,11,11,11,1120373922

7S Ulso PrpRC5013/RC5019, SepRC5079(5039)

SR Uranium-234,235,238 by Alpha Spec

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

5I CLIENT: HANFORD

Sep1 DT/Tm Tech: _____

Batch: 2260474

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Ini/Date
--------------------------------------	-------------------	-----------------------------	------------------------	------------------------	-------------------	----------------	---------------------------------	-------------------------

88D241AC-LCS:
 U-232 RDL: pCi/g LCL:20 UCL:105 RPD:35 Uranium RDL: pCi/g LCL:70 UCL:130 RPD:35

88C3M1AC-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
 88D241AA-BLK:
 Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
 88D241AC-LCS:
 Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

ICOC Fraction Transfer/Status Report

ByDate: 9/10/2002, 10/11/2002, Batch: '2260474', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2260474				
AC	Rev1C	BELSITOB	9/19/2002 12:45:23	
SC		WagarR	IsBatched	9/17/2002 5:33:06 PM
SC		BELSITOB	InPrep	9/19/2002 12:45:23 PM
SC		BELSITOB	Prep1C	9/23/2002 10:52:39 AM
SC		WAGNERJ	InPrep2	9/30/2002 1:16:31 PM
SC		WAGNERJ	Prep2C	10/4/2002 1:08:39 PM
SC		HAMMERL	InSep1	10/6/2002 8:01:13 AM
SC		McPHERONC	InSep2	10/8/2002 9:01:32 AM
SC		McPHERONC	InSep2	10/9/2002 7:53:06 AM
SC		McPHERONC	Sep2C	10/9/2002 7:53:44 AM
SC		BlackCL	InCnt1	10/9/2002 8:14:22 AM
SC		BlackCL	CalcC	10/9/2002 12:43:00 PM
SC		SMITHP	Rev1C	10/10/2002 1:12:33 PM
AC		BELSITOB	9/23/2002 10:52:39	
AC		WAGNERJ	9/30/2002 1:16:31 PM	
AC		WAGNERJ	10/4/2002 1:08:39 PM	
AC		HAMMERL	10/6/2002 8:01:13	
AC		McPHERONC	10/8/2002 9:01:32	
AC		McPHERONC	10/9/2002 7:53:06	
AC		McPHERONC	10/9/2002 7:53:44	
AC		BlackCL	10/9/2002 8:14:22	
AC		BlackCL	10/9/2002 12:43:00	
AC		SMITHP	10/10/2002 1:12:33	

9/17/2002 5:33:17 PM

Sample Preparation/Analysis

Balance Id: PB3001-5

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
SI CLIENT: HANFORD

PRIORITY

Pipet #: N/A

Report Due: 10/08/2002

WO 3852

Sep1 DT/Tm Tech: ↓

Batch: 2260475 SOIL

pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech: ↓

SEQ Batch, Test: None

Prep Tech: RB

(4)

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AH J2I170181-1-SAMP	385.5				S200	G5	600		9/24/02 6347	9/23/2002 OR
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:	Beta:			
2 E8C3M-1-AM-X J2I170181-1-DUP	385.5					G1			9/26/02 0628	9/25/2002 OR
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:	Beta:			
3 E8D25-1-AA-BX J2I170000-475-MBLK	348.0	OSBK				G1			9/25/2002 8580	9/24/2002 OR
09/16/2002 14:50	AmtRec:		#Containers: 1		Scr Rst:	Alpha:	Beta:			
4 E8D25-1-AC-CM J2I170000-475-MLCS	200.01	CAL491			S200	G2			9/25/2002 0459	9/24/2002 OR
09/16/2002 14:50	AmtRec:		#Containers: 1		Scr Rst:	Alpha:	Beta:			

Comments: recount dup on different detector E8C3M-1-AH

All Clients for Batch:

127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc.

BG1, 27038

E8C3M1AH-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

E8D251AA-MBLK:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

E8D251AC-MLCS:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

STL Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt,

Richland Wa

r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

9/17/2002 5:33:18 PM

Sample Preparation/Analysis

Balance Id:

AX Gamma PrpRC5013/5017
 TA Gamma by HPGE
 5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Report Due: 10/08/2002

Batch: 2260475

pCi/g

SEQ Batch, Test: None

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	
Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	K-40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35
Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
RA-228DA	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35

EBC3M1AH-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D251AA-MBLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D251AC-MLCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

9/29/02 9:51:02 AM

ICOC Fraction Transfer/Status Report

ByDate: 8/30/02, 9/30/02, Batch: '2260475', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	2260475				
AC		CalcC	BELSITOB	9/23/02 10:52:20 AM	
SC			WagarR	IsBatched 9/17/02 5:33:06 PM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	Prep1C 9/23/02 10:52:20 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C 9/23/02 10:52:23 AM	RICH-RC-5017 REVISION 3
SC			IOVINC	InCnt1 9/23/02 11:09:51 AM	RICH-RD-0007 REVISION 3
SC			BlackCL	CalcC 9/26/02 8:48:04 AM	RICH-RD-0007 REVISION 3
AC			BELSITOB	9/23/02 10:52:23 AM	
AC			IOVINC	9/23/02 11:09:51 AM	
AC			BlackCL	9/26/02 8:48:04 AM	

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

58

9/24/02 9:51:09 AM

Sample Preparation/Analysis

Balance Id:1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

CH Sr-Total PrpRC5013, SepRC5006
TH Total Strontium by GPC
SI CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002 **WO 3852**

Sep1 DT/Tm Tech: **10/3/02/1256/EPB**

Batch: 2260476 SOIL pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AD J21170181-1-SAMP	5.99g,in		SRTA7951 08/05/02 06/03/02 r		1.5	0.0741g	50	31A	1925	10/3/2002 EPB
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML		#Containers: 4					Scr Rst:	Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
2 E8C3M-1-AN-X J21170181-1-DUP	6.03g,in		SRTA7952 08/05/02 06/03/02 r			0.0788g		31B	1925	10/3/2002 EPB
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML		#Containers: 4					Scr Rst:	Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
3 E8D28-1-AA-B J21170000-476-BLK	6.0g,in		SRTA7953 08/05/02 06/03/02 r			0.0915g		31C	1925	10/3/2002 EPB
09/16/2002 14:50	AmtRec:		#Containers: 1					Scr Rst:	Alpha:	Beta:
4 E8D28-1-AC-C J21170000-476-LCS	6.0g,in		STSB0646 09/16/02 06/03/02 r			0.0954g		31D	1925	10/3/2002 EPB
09/16/2002 14:50	AmtRec:		#Containers: 1					Scr Rst:	Alpha:	Beta:

Comments:

11 Clients for Batch:

127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG1, 27038

8C3M1AD-SAMP Constituent List:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
8D281AA-BLK:					
Sr-90	RDL:1	pCi/g	LCL:	UCL:	RPD:
8D281AC-LCS:					
Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

8C3M1AD-SAMP Calc Info:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
Richland Wa. r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

9/24/02 9:51:11 AM

Sample Preparation/Analysis

Balance Id:1120373922

CH Sr-Total PrpRC5013, SepRC5006

Pipet #: _____

TH Total Strontium by GPC

PRIORITY Sep1 DT/Tm Tech: _____

SI CLIENT: HANFORD

Report Due: 10/08/2002

Batch: 2260476

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Ini/Date
Uncert Level (#s) : 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
88D281AA-BLK:										
Uncert Level (#s) : 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
88D281AC-LCS:										
Uncert Level (#s) : 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					

10/4/02 1:10:51 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/4/02, 10/5/02, Batch: '2260476', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2260476				
AC	CalcC	BELSITOB	9/19/02 12:45:16 PM	
SC		WagarR	IsBatched	9/17/02 5:33:06 PM
SC		BELSITOB	InPrep	9/19/02 12:45:16 PM
SC		BELSITOB	Prep1C	9/23/02 10:52:43 AM
SC		WAGNERJ	InPrep2	9/23/02 11:36:15 AM
SC		WAGNERJ	Prep2C	9/25/02 10:59:36 AM
SC		SMITHP	InSep1	10/2/02 3:54:40 PM
SC		SMITHP	Sep1C	10/3/02 3:21:22 PM
SC		DAWKINSO	InCnt1	10/3/02 5:26:35 PM
SC		BlackCL	CalcC	10/4/02 7:53:50 AM
AC		BELSITOB	9/23/02 10:52:43 AM	
AC		WAGNERJ	9/23/02 11:36:15 AM	
AC		WAGNERJ	9/25/02 10:59:36 AM	
AC		SMITHP	10/2/02 3:54:40 PM	
AC		SMITHP	10/3/02 3:21:22 PM	
AC		DAWKINSO	10/3/02 5:26:35 PM	
AC		BlackCL	10/4/02 7:53:50 AM	

61

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

9/17/2002 5:33:18 PM

Sample Preparation/Analysis

Balance Id:

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)

PRIORITY

Pipet #:

Report Due: 10/08/2002

W03852

SI CLIENT: HANFORD

Sep1 DT/Tm Tech:

Batch: 2260477

SOIL

mg/kg

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AA J2I170181-1-SAMP										
09/16/2002 14:50			AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:		Beta:
2 E8C3M-1-AP-S J2I170181-1-MS										
09/16/2002 14:50			AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:		Beta:
3 E8C3M-1-AQ-X J2I170181-1-DUP										
09/16/2002 14:50			AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:		Beta:
4 E8C3M-1-AR-S J2I170181-1-MS										
09/16/2002 14:50			AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:		Beta:
5 E8D3A-1-AA-B J2I170000-477-BLK										
09/16/2002 14:50			AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:
6 E8D3A-1-AC-C J2I170000-477-LCS										
09/16/2002 14:50			AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:

Sample Preparation/Analysis

Balance Id: _____

DW Alkaline Digestion by method 3060A
 EA Chromium, Hexavalent (7196A)
 SI CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

Sep1 DT/Tm Tech: _____

Batch: 2260477 mg/kg

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: _____

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
--------------------------------------	-------------------	-----------------------------	------------------------	------------------------	--------------	--------------------	-------------------	----------------	---------------------------------	--------------------------

Comments:

11 Clients for Batch:

127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc.

BG1, 27038

3C3M1AA-SAMP Constituent List:

3C3M1AP-MS Constituent List:

3C3M1AR-MS:

1D3A1AA-BLK:

1D3A1AC-LCS:

1C3M1AA-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1C3M1AP-MS Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

3C3M1AR-MS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

D3A1AA-BLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

D3A1AC-LCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 63 Pages

Report No.: 20768

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03852	B01-054	J004L8	J21170181-1	E8C3M1AE	9E8C3M10	2260472
		J004L8	J21170181-1	E8C3M1AC	9E8C3M10	2260474
		J004L8	J21170181-1	E8C3M1AH	9E8C3M10	2260475
		J004L8	J21170181-1	E8C3M1AD	9E8C3M10	2260476
		J004L8	J21170181-1		9E8C3M10	2260477
		J004L8	J21170181-1		9E8C3M20	2289544
		J004L8	J21170181-1			



Sample Results Summary

Date: 29-Oct-02

STL Richland STLRL

Ordered by Client Sample ID, Batch No.

Report No. : 20768

SDG No: W03852

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC MDA	RER
J004L8	E8C3M1AE	PU-238	-3.80E-03 +- 5.4E-03	U	pCi/g	31.86%	5.37E-02	
		PU239/40	2.47E-02 +- 3.4E-02	U	pCi/g	31.86%	5.37E-02	
J004L8	E8C3M1AC	U-234	5.64E-01 +- 2.1E-01		pCi/g	47.64%	3.47E-02	
		U-235	1.28E-02 +- 2.6E-02	U	pCi/g	47.64%	3.47E-02	
		U-238	4.87E-01 +- 1.9E-01		pCi/g	47.64%	3.47E-02	
J004L8	E8C3M1AH	CO-60	3.61E-03 +- 1.0E-02	U	pCi/g		1.83E-02	
		CS-137	8.04E-03 +- 1.2E-02	U	pCi/g		2.01E-02	
		EU-152	8.52E-02 +- 4.5E-02	U	pCi/g		5.33E-02	
		EU-154	1.97E-02 +- 3.3E-02	U	pCi/g		5.84E-02	
		EU-155	3.38E-02 +- 2.7E-02	U	pCi/g		4.58E-02	
J004L8	E8C3M1AD	STRONTIUM	9.87E-02 +- 8.1E-02	U	pCi/g	74.10%	1.56E-01	
J004L8	9E8C3M10	HEXCHROME	3.40E+00 +- 0.0E+00		mg/kg	N/A	8.00E-02	
J004L8	E8C3M2AF	AM-241	9.95E-03 +- 1.4E-02	U	pCi/g	88.68%	1.35E-02	
J004L8 DUP	E8C3M1AJ	PU-238	6.44E-03 +- 1.3E-02	U	pCi/g	44.99%	1.75E-02	1.5
		PU239/40	0.00E+00 +- 1.6E-02	U	pCi/g	44.99%	1.75E-02	1.3
J004L8 DUP	E8C3M1AL	U-234	8.49E-01 +- 2.7E-01		pCi/g	49.28%	3.44E-02	1.7
		U-235	0.00E+00 +- 3.1E-02	U	pCi/g	49.28%	3.44E-02	0.6
		U-238	6.92E-01 +- 2.3E-01		pCi/g	49.28%	7.17E-02	1.4
J004L8 DUP	E8C3M1AM	CO-60	1.35E-02 +- 1.2E-02	U	pCi/g		2.11E-02	1.3
		CS-137	1.32E-02 +- 1.2E-02	U	pCi/g		2.13E-02	0.6
		EU-152	8.84E-02 +- 4.4E-02	U	pCi/g		5.80E-02	0.1
		EU-154	-2.74E-03 +- 3.9E-02	U	pCi/g		6.54E-02	0.9
		EU-155	4.06E-02 +- 3.6E-02	U	pCi/g		6.13E-02	0.3
J004L8 DUP	E8C3M1AN	STRONTIUM	7.75E-02 +- 7.3E-02	U	pCi/g	78.80%	1.45E-01	0.4
J004L8 DUP	E8C3M1AQ	HEXCHROME	3.40E+00 +- 0.0E+00		mg/kg	N/A	8.00E-02	
J004L8 DUP	E8C3M2AK	AM-241	0.00E+00 +- 1.1E-02	U	pCi/g	97.70%	1.19E-02	1.1

Number of Results: 26

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLrchSaSum U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
 3350 George Washington Way
 Richland, WA 99352

October 29, 2002

Attention: Joan Kessner

SAF Number	:	B01-054
Date SDG Closed	:	September 17, 2002
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W03852
Data Deliverable	:	21-Day / Summary

I. Introduction

On September 17, 2002, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>STLR ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
E8C3M	J004L8	SOIL	9/17/02

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy

Americium-241 by method RICH-RC-5080

Plutonium-238, 239/240 by method RICH-RC-5080

Uranium-234, -235, -238 by method RICH-RC-5079

Gas Proportional Counting

Total Strontium by method RICH-RC-5006

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017

Chemical Analyses

Chromium Hex by EPA method 7196A

Bechtel Hanford, Inc.
October 29, 2002
Page 2

III. Quality Control

The analytical results for each analysis performed under SDG W03852 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy

Americium-241 by method RICH-RC-5080:

The first analysis batch produced smeared spectra so the batch was re-analyzed. The LCS, batch blank, sample duplicate (J004L8), matrix spike, and sample results are within contractual requirements.

Plutonium-238, 239/240 by method RICH-RC-5080:

The LCS, batch blank, sample duplicate (J004L8), matrix spike, and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:

The LCS, batch blank, sample duplicate (J004L8), and sample results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The LCS, batch blank, sample duplicate (J004L8), and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

At the request of the client the U-238DHP energy lines are at lower abundance, therefore providing erratic recoveries and higher MDA than the CRDL for the LCS. Except as noted, the LCS, batch blank, sample duplicate (J004L8), and sample results are within contractual requirements.

Chemical Analyses

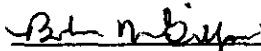
Chromium Hex by EPA method 7196A:

The LCS, batch blank, sample duplicate (J004L8), matrix spike (J004L8), color (J004L8 PbCrO₄) spike, and sample results are within contractual requirements.

Bechtel Hanford, Inc.
October 29, 2002
Page 3

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

Reviewed and approved:



Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,\dots)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/\sqrt{n}), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u_c the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgrndCnt} / \text{BkgrndCntMin}) / \text{SCntMin})) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgrndCnt} / \text{BkgrndCntMin}) / \text{SCntMin}) + 2.71 / \text{SCntMin}) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D) / [\text{sqrt}(\text{TPUs}^2 + \text{TPUD}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUD is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 29-Oct-02

Report No. : 20768

SDG No.: W03852

QC Type	Work Order Number	Parameter	Result ± Uncertainty (2σ)	Qual	Units	Yield	Recovery	Bias	MDC MDA
BLANK QC	E8D211AA	PU-238	-1.48E-03 ± 3.0E-03	U	pCi/g	42.16%			3.53E-02
		PU239/40	0.00E+00 ± 1.8E-02	U	pCi/g	42.16%			2.00E-02
BLANK QC	E8D211AD	PU-238	9.33E-03 ± 1.9E-02	U	pCi/g	35.61%			2.53E-02
		PU239/40	1.87E-02 ± 2.7E-02	U	pCi/g	35.61%			2.53E-02
BLANK QC	E8D241AA	U-234	7.25E-02 ± 4.6E-02		pCi/g	87.56%			1.79E-02
		U-235	0.00E+00 ± 1.6E-02	U	pCi/g	87.56%			1.79E-02
		U-238	7.65E-02 ± 4.8E-02		pCi/g	87.56%			3.73E-02
BLANK QC	E8D251AA	CO-60	9.99E-03 ± 8.4E-03	U	pCi/g				1.59E-02
		CS-137	-5.01E-03 ± 8.0E-03	U	pCi/g				1.33E-02
		EU-152	-5.54E-03 ± 2.3E-02	U	pCi/g				3.62E-02
		EU-154	-1.19E-02 ± 2.4E-02	U	pCi/g				4.06E-02
		EU-155	6.09E-03 ± 2.0E-02	U	pCi/g				3.47E-02
BLANK QC	E8D281AA	STRONTIUM	-1.56E-02 ± 5.7E-02	U	pCi/g	91.50%			1.41E-01
BLANK QC	E8D232AA	AM-241	4.12E-03 ± 1.1E-02	U	pCi/g	82.93%			2.47E-02
LCS	E8D211AC	PU239/40	3.55E+00 ± 7.4E-01		pCi/g	34.38%	102.41%	0.0	4.27E-02
LCS	E8D211AE	PU239/40	3.90E+00 ± 7.3E-01		pCi/g	53.86%	112.57%	0.1	1.66E-02
LCS	E8D241AC	U-234	3.12E+00 ± 6.6E-01		pCi/g	89.96%	95.08%	0.0	1.79E-02
		U-235	1.32E-01 ± 6.4E-02		pCi/g	89.96%	88.12%	-0.1	1.79E-02
		U-238	3.22E+00 ± 6.8E-01		pCi/g	89.96%	93.67%	-0.1	1.79E-02
LCS	E8D251AC	CS-137	2.51E-01 ± 5.9E-02		pCi/g		86.44%	-0.1	4.07E-02
		K-40	2.03E+01 ± 2.6E+00		pCi/g		104.01%	0.0	2.97E-01
		RA-226	1.06E+00 ± 1.7E-01		pCi/g		91.87%	-0.1	7.09E-02
		RA-228	1.87E+00 ± 2.9E-01		pCi/g		99.73%	0.0	1.30E-01
		U-238DHP	2.02E+00 ± 1.9E+00	U	pCi/g		192.30%	0.9	3.09E+00
LCS	E8D281AC	STRONTIUM	1.04E+00 ± 3.0E-01		pCi/g	95.40%	90.66%	-0.1	1.31E-01
LCS	E8D232AC	AM-241	4.10E+00 ± 7.6E-01		pCi/g	94.98%	90.08%	-0.1	1.24E-02
MATRIX SPI	E8C3M1AP	HEXCHROME	3.58E+01 ± 0.0E+00		mg/kg	N/A	89.60%	-0.1	8.00E-02
LCS	E8D3A1AC	HEXCHROME	3.95E+01 ± 0.0E+00		mg/L	N/A	98.87%	0.0	2.00E-03
BLANK QC	E8D3A1AA	HEXCHROME	0.00E+00 ± 0.0E+00	U	mg/L	N/A			2.00E-03

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchQcSum U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

QC Results Summary
STL Richland STLRL
Ordered by QC Type, Batch No.

Date: 29-Oct-02

Report No. : 20768

SDG No.: W03852

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
---------	-------------------	-----------	-----------------------------	------	-------	-------	----------	------	---------

Number of Results: 29

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRechQcSum
V3.95 A97

FORM I

Date: 29-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J2I170181-1

Report No. : 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8

COC No. : B01-054-010

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472			Work Order: E8C3M1AE			Report DB ID: 9E8C3M10						
PU-238	-3.80E-03	U	5.4E-03	5.4E-03	5.37E-02	pCi/g	31.86%	-0.07	10/12/02 08:34 p		2.05	PUISO_PLATE_AEA
							1.40E-02	1.00E+00			G	ALP37
PU239/40	2.47E-02	U	3.3E-02	3.4E-02	5.37E-02	pCi/g	31.86%	0.46	10/12/02 08:34 p		2.05	PUISO_PLATE_AEA
							1.40E-02	1.00E+00			G	ALP37
Batch: 2260474			Work Order: E8C3M1AC			Report DB ID: 9E8C3M10						
U-234	5.64E-01		1.7E-01	2.1E-01	3.47E-02	pCi/g	47.64%	(16.2)	10/9/02 10:15 a		1.0	UIISO_IE_PLATE_AE
							1.00E+00	(5.5)			G	ALP1
U-235	1.28E-02	U	2.6E-02	2.6E-02	3.47E-02	pCi/g	47.64%	0.37	10/9/02 10:15 a		1.0	UIISO_IE_PLATE_AE
							1.00E+00	0.99			G	ALP1
U-238	4.87E-01		1.6E-01	1.9E-01	3.47E-02	pCi/g	47.64%	(14.)	10/9/02 10:15 a		1.0	UIISO_IE_PLATE_AE
							1.00E+00	(5.2)			G	ALP1
Ratio U-234/238 = 1.2												
Batch: 2260475			Work Order: E8C3M1AH			Report DB ID: 9E8C3M10						
CO-60	3.61E-03	U	1.0E-02	1.0E-02	1.83E-02	pCi/g		0.2	9/23/02 05:47 p		385.5	GAMMA_GS
							5.00E-02	0.7			g	GER5\$1
CS-137	8.04E-03	U	1.2E-02	1.2E-02	2.01E-02	pCi/g		0.4	9/23/02 05:47 p		385.5	GAMMA_GS
							1.00E-01	(1.4)			g	GER5\$1
EU-152	8.52E-02	U	4.5E-02	4.5E-02	5.33E-02	pCi/g		(1.6)	9/23/02 05:47 p		385.5	GAMMA_GS
							1.00E-01	(3.8)			g	GER5\$1
EU-154	1.97E-02	U	3.3E-02	3.3E-02	5.84E-02	pCi/g		0.34	9/23/02 05:47 p		385.5	GAMMA_GS
							1.00E-01	(1.2)			g	GER5\$1

10

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

FORM I

Date: 29-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J2I170181-1

Report No. : 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8

COC No. : B01-054-010

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
EU-155	3.38E-02	U	2.7E-02	2.7E-02	4.58E-02	pCi/g	1.00E-01	0.74 (2.5)	9/23/02 05:47 p		385.5 g	GAMMA_GS GER5\$1
Batch: 2260476	Work Order: E8C3M1AD		Report DB ID: 9E8C3M10									
STRONTIUM	9.87E-02	U	7.7E-02	8.1E-02	1.56E-01	pCi/g	74.10%	0.63 (2.4)	10/3/02 07:00 p		5.99 G	SRTOT_SEP_PRECIP GPC31A
Batch: 2260477	Work Order:		Report DB ID: 9E8C3M10									
HEXCHROME	3.40E+00			0.0E+00	8.00E-02	mg/kg	N/A	(42.5) N/A	10/5/02		2.5 G	EPA7196
Batch: 2289544	Work Order: E8C3M2AF		Report DB ID: 9E8C3M20									
AM-241	9.95E-03	U	1.4E-02	1.4E-02	1.35E-02	pCi/g	88.68% 1.00E+00	0.74 (1.4)	10/26/02 10:37 a		2.01 G	AMCMISO_EIE_PLT_ ALP121

Number of Results: 13

Comments:



FORM II

Date: 29-Oct-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J21170181-1

Report No.: 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8 DUP

COC No.: B01-054-010

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Actlon Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncrt	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8C3M1AJ			Report DB ID: E8C3M1JR		Orig Sa DB ID: 9E8C3M10						
PU-238	6.44E-03	U	1.3E-02	1.3E-02	1.75E-02	pCi/g	44.99%	0.37	10/12/02 08:34 p		2.03	UIISO_PLATE_AEA
	-3.80E-03	U RER	1.5			1.00E+00		1.			G	ALP38
PU239/40	0.00E+00	U	0.0E+00	1.6E-02	1.75E-02	pCi/g	44.99%	0.	10/12/02 08:34 p		2.03	UIISO_PLATE_AEA
	2.47E-02	U RER	1.3			1.00E+00		0.			G	ALP38
<i>Alpha Spec Result Sum = 6.4E-03</i>												
Batch: 2260474	Work Order: E8C3M1AL			Report DB ID: E8C3M1LR		Orig Sa DB ID: 9E8C3M10						
U-234	8.49E-01		2.1E-01	2.7E-01	3.44E-02	pCi/g	49.28%	(24.7)	10/9/02 10:16 a		0.99	UIISO_IE_PLATE_AE
	5.64E-01	RER	1.7			1.00E+00		(6.3)			G	ALP2
U-235	0.00E+00	U	0.0E+00	3.1E-02	3.44E-02	pCi/g	49.28%	0.	10/9/02 10:16 a		0.99	UIISO_IE_PLATE_AE
	1.28E-02	U RER	0.6			1.00E+00		0.			G	ALP2
U-238	6.92E-01		1.9E-01	2.3E-01	7.17E-02	pCi/g	49.28%	(9.7)	10/9/02 10:16 a		0.99	UIISO_IE_PLATE_AE
	4.87E-01	RER	1.4			1.00E+00		(5.9)			G	ALP2
<i>Ratio U-234/238 = 1.2</i>										<i>Alpha Spec Result Sum = 1.5E+00</i>		
Batch: 2260475	Work Order: E8C3M1AM			Report DB ID: E8C3M1MR		Orig Sa DB ID: 9E8C3M10						
CO-60	1.35E-02	U	1.2E-02	1.2E-02	2.11E-02	pCi/g		0.64	9/25/02 08:28 p		385.5	GAMMA_GS
	3.61E-03	U RER	1.3			5.00E-02		(2.3)			g	GER1\$1
CS-137	1.32E-02	U	1.2E-02	1.2E-02	2.13E-02	pCi/g		0.62	9/25/02 08:28 p		385.5	GAMMA_GS
	8.04E-03	U RER	0.6			1.00E-01		(2.2)			g	GER1\$1
EU-152	8.84E-02	U	4.4E-02	4.4E-02	5.80E-02	pCi/g		(1.5)	9/25/02 08:28 p		385.5	GAMMA_GS
	8.52E-02	U RER	0.1			1.00E-01		(4.1)			g	GER1\$1
EU-154	-2.74E-03	U	3.9E-02	3.9E-02	6.54E-02	pCi/g		-0.04	9/25/02 08:28 p		385.5	GAMMA_GS
	1.97E-02	U RER	0.9			1.00E-01		-0.14			g	GER1\$1

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchDupV3. MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 95 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

12

FORM II

Date: 29-Oct-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W03852

Collection Date: 9/16/2002 2:50:00 PM

Lot-Sample No.: J21170181-1

Report No. : 20768

Received Date: 9/17/2002 10:18:00 AM

Client Sample ID: J004L8 DUP

COC No. : B01-054-010

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
EU-155	4.06E-02	U	3.6E-02	3.6E-02	6.13E-02	pCi/g		0.66	9/25/02 08:28 p		385.5	GAMMA_GS
	3.38E-02	U RER	0.3			1.00E-01		(2.2)			g	GER1\$1
Batch: 2260476	Work Order: E8C3M1AN			Report DB ID: E8C3M1NR		Orig Sa DB ID: 9E8C3M10						
STRONTIUM	7.75E-02	U	7.0E-02	7.3E-02	1.45E-01	pCi/g	78.80%	0.54	10/3/02 07:00 p		6.03	SRTOT_SEP_PRECIP
	9.87E-02	U RER	0.4					(2.1)			G	GPC31B
Batch: 2260477	Work Order:			Report DB ID: E8C3M1AQ		Orig Sa DB ID: 9E8C3M10						
HEXCHROME	3.40E+00			0.0E+00	8.00E-02	mg/kg	N/A	(42.5)	10/5/02		2.5	EPA7196
	3.40E+00	RPD	0.0					N/A			G	
Batch: 2289544	Work Order: E8C3M2AK			Report DB ID: E8C3M2KR		Orig Sa DB ID: 9E8C3M20						
AM-241	0.00E+00	U	0.0E+00	1.1E-02	1.19E-02	pCi/g	97.70%	0.	10/26/02 10:37 a		2.02	AMCMISO_EIE_PLT_
	9.95E-03	U RER	1.1			1.00E+00		0.			G	ALP123

Number of Results: 13

Comments:

13

STL Richland

RER - Replicate Error Ratio = $(S-D)/\sqrt{(sq(TPUs)+sq(TPUD))}$ as defined by ICPT BOA.

rptSTLRchDupV3.
95 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 29-Oct-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170000-472

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8D211AA		Report DB ID: E8D211AB									
PU-238	-1.48E-03	U	3.0E-03	3.0E-03	3.53E-02	pCi/g	42.16%	-0.04	10/12/02 08:34 p		2.0	PUISO_PLATE_AEA
					7.67E-03	1.00E+00		-1.			G	ALP39
PU239/40	0.00E+00	U	0.0E+00	1.8E-02	2.00E-02	pCi/g	42.16%	0.	10/12/02 08:34 p		2.0	PUISO_PLATE_AEA
						1.00E+00		0.			G	ALP39
Batch: 2260472	Work Order: E8D211AD		Report DB ID: E8D211DX									
PU-238	9.33E-03	U	1.9E-02	1.9E-02	2.53E-02	pCi/g	35.61%	0.37	10/12/02 08:35 p		1.97	PUISO_PLATE_AEA
						1.00E+00		1.			G	ALP43
PU239/40	1.87E-02	U	2.6E-02	2.7E-02	2.53E-02	pCi/g	35.61%	0.74	10/12/02 08:35 p		1.97	PUISO_PLATE_AEA
						1.00E+00		(1.4)			G	ALP43

Number of Results: 4

Comments:

14

FORM II

Date: 29-Oct-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170000-473

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2289544	Work Order: E8D232AA			Report DB ID: E8D232AB								
AM-241	4.12E-03	U	1.0E-02	1.1E-02	2.47E-02	pCi/g	82.93%	0.17	10/26/02 10:37 a		2.0	AMCMISO_EIE_PLT_
					5.36E-03	1.00E+00		0.78			G	ALP124

Number of Results: 1

Comments:

1-5

FORM II
BLANK RESULTS

Date: 29-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-474

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260474	Work Order: E8D241AA			Report DB ID: E8D241AB								
U-234	7.25E-02		4.4E-02	4.6E-02	1.79E-02	pCi/g	87.56%	(4.1)	10/9/02 10:16 a		1.0	UIISO_IE_PLATE_AE
						1.00E+00		(3.2)			G	ALP3
U-235	0.00E+00	U	0.0E+00	1.6E-02	1.79E-02	pCi/g	87.56%	0.	10/9/02 10:16 a		1.0	UIISO_IE_PLATE_AE
						1.00E+00		0.			G	ALP3
U-238	7.65E-02		4.6E-02	4.8E-02	3.73E-02	pCi/g	87.56%	(2.1)	10/9/02 10:16 a		1.0	UIISO_IE_PLATE_AE
					9.70E-03	1.00E+00		(3.2)			G	ALP3

Ratio U-234/238 = 0.9

Number of Results: 3

Comments:

16

FORM II

Date: 29-Oct-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170000-475

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260475	Work Order: E8D251AA			Report DB ID: E8D251AX								
CO-60	9.99E-03	U	8.4E-03	8.4E-03	1.59E-02	pCi/g		0.63 (2.4)	9/24/02 07:00 p		348.0 g	GAMMA_GS GER1\$1
CS-137	-5.01E-03	U	8.0E-03	8.0E-03	1.33E-02	pCi/g		-0.38 1.00E-01 -(1.3)	9/24/02 07:00 p		348.0 g	GAMMA_GS GER1\$1
EU-152	-5.54E-03	U	2.3E-02	2.3E-02	3.62E-02	pCi/g		-0.15 1.00E-01 -0.49	9/24/02 07:00 p		348.0 g	GAMMA_GS GER1\$1
EU-154	-1.19E-02	U	2.4E-02	2.4E-02	4.06E-02	pCi/g		-0.29 1.00E-01 -0.99	9/24/02 07:00 p		348.0 g	GAMMA_GS GER1\$1
EU-155	6.09E-03	U	2.0E-02	2.0E-02	3.47E-02	pCi/g		0.18 1.00E-01 0.6	9/24/02 07:00 p		348.0 g	GAMMA_GS GER1\$1

Number of Results: 5

Comments:

11

FORM II

Date: 29-Oct-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J21170000-476

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2260476	Work Order: E8D281AA			Report DB ID: E8D281AB								
STRONTIUM	-1.56E-02	U	5.7E-02	5.7E-02	1.41E-01	pCi/g	91.50%	-0.11	10/3/02 07:00 p		6.0	SRTOT_SEP_PRECIP
					6.55E-02			-0.54			G	GPC31C

Number of Results: 1

Comments:

1
00

FORM II

Date: 29-Oct-02

BLANK RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170181-

Report No. : 20768

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2260477	Work Order:			Report DB ID: E8D3A1AA								
HEXCHROME	0.00E+00	U		0.0E+00	2.00E-03	mg/L	N/A	0. N/A	10/5/02		100.0 ML	EPA7196

Number of Results: 1

Comments:

19

FORM II

Date: 29-Oct-02

LCS RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170000-472

Report No. : 20768

Matrix: SOIL

Parameter	Result	Count Qual	Count Error (2s)	Total Uncert(2 s)	MDC MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260472	Work Order: E8D211AC					Report DB ID: E8D211CS							
PU239/40	3.55E+00		3.6E-01	7.4E-01	4.27E-02	pCi/g	34.38%	3.46E+00	1.7E-01	102.41%	10/12/02 08:35 p	2.0	PUISO_PLATE_AEA
							Rec Limits:	70.	130.	0.0		G	ALP41
Batch: 2260472	Work Order: E8D211AE					Report DB ID: E8D211EM							
PU239/40	3.90E+00		3.1E-01	7.3E-01	1.66E-02	pCi/g	53.86%	3.46E+00	1.7E-01	112.57%	10/12/02 08:36 p	2.0	PUISO_PLATE_AEA
							Rec Limits:	70.	130.	0.1		G	ALP47

Number of Results: 2

Comments:

20

FORM II
LCS RESULTS

Date: 29-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21170000-473

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2289544	Work Order: E8D232AC			Report DB ID: E8D232CS									
AM-241	4.10E+00		2.7E-01	7.6E-01	1.24E-02	pCi/g	94.98%	4.55E+00	1.3E-01	90.08%	10/26/02 10:37 a	2.0	AMCMISO_EIE_PLT_
							Rec Limits:	70.	130.	-0.1		G	ALP127

Number of Results: 1

Comments:

21

FORM II
LCS RESULTS

Date: 29-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21170000-474

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260474	Work Order: E8D241AC			Report DB ID: E8D241CS									
U-234	3.12E+00		2.9E-01	6.6E-01	1.79E-02	pCi/g	89.96%	3.28E+00	2.0E-02	95.08%	10/9/02 10:16 a	1.0	UIISO_IE_PLATE_AE
							Rec Limits:	70.	130.	0.0		G	ALP4
U-235	1.32E-01		5.9E-02	6.4E-02	1.79E-02	pCi/g	89.96%	1.50E-01	9.0E-04	88.12%	10/9/02 10:16 a	1.0	UIISO_IE_PLATE_AE
							Rec Limits:	70.	130.	-0.1		G	ALP4
U-238	3.22E+00		2.9E-01	6.8E-01	1.79E-02	pCi/g	89.96%	3.43E+00	2.1E-02	93.67%	10/9/02 10:16 a	1.0	UIISO_IE_PLATE_AE
							Rec Limits:	70.	130.	-0.1		G	ALP4

Number of Results: 3

Comments:

22

FORM II
LCS RESULTS

Date: 29-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-475

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Count Qual	Count Error (2s)	Total Uncert(2 s)	MDC MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260475	Work Order: E8D251AC			Report DB ID: E8D251CM									
CS-137	2.51E-01		5.9E-02	5.9E-02	4.07E-02	pCi/g		2.90E-01	1.3E-02	86.44%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	-0.1		g	GER2\$1
K-40	2.03E+01		2.6E+00	2.6E+00	2.97E-01	pCi/g		1.95E+01	1.9E+00	104.01%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER2\$1
RA-226	1.06E+00		1.7E-01	1.7E-01	7.09E-02	pCi/g		1.15E+00	5.2E-02	91.87%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	-0.1		g	GER2\$1
RA-228	1.87E+00		2.9E-01	2.9E-01	1.30E-01	pCi/g		1.87E+00	9.6E-02	99.73%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER2\$1
U-238DHP	2.02E+00	U	1.9E+00	1.9E+00	3.09E+00	pCi/g		1.05E+00	5.4E-02	192.30%	9/24/02 06:59 p	200.01	GAMMA_GS
							Rec Limits:			0.9		g	GER2\$1

Number of Results: 5

Comments:

70
63

FORM II
LCS RESULTS

Date: 29-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J2I170000-476

SDG: W03852
Report No. : 20768

Matrix: SOIL

Parameter	Result	Count Qual	Count Error (2s)	Total Uncert(2 s)	MDC MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector	
Batch: 2260476	Work Order: E8D281AC	Report DB ID: E8D281CS												
STRONTIUM	1.04E+00		1.3E-01	3.0E-01	1.31E-01	pCi/g	95.40%	1.15E+00	2.3E-02	90.66%	10/3/02 07:00 p	6.0	SRTOT_SEP_PRECIP	
							Rec Limits:	70.	130.	-0.1		G	GPC31D	

Number of Results: 1

Comments:

24

FORM II

Date: 29-Oct-02

LCS RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170181-

Report No. : 20768

Matrix: SOIL

Parameter	Result	Count Qual	Count Error (2s)	Total Uncert(2 s)	MDC MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260477	Work Order:					Report DB ID: E8D3A1AC							
HEXCHROME	3.95E+01			0.0E+00	2.00E-03	mg/L	N/A	4.00E+01		98.87%	10/5/02	100.0	EPA7196
							Rec Limits:			0.0		ML	

Number of Results: 1

Comments:

ST

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V3.95 A97

FORM II

Date: 29-Oct-02

MATRIX SPIKE RESULTS

Lab Name: STL Richland

SDG: W03852

Lot-Sample No.: J2I170181-1

Report No. : 20768

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2260477	Work Order:			Report DB ID: E8C3M1AP		Orig Sa DB ID: 9E8C3M10							
HEXCHROME	3.58E+01			0.0E+00	8.00E-02	mg/kg	N/A	89.60%	3.99E+01		10/5/02	2.5	EPA7196
	3.40E+00	RPD	1.7									G	

Number of Results: 1

Comments:

26

P

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2 I170187
 Client ID: BHI
 Due Date: 10/8/02
 QC Batch Number: 2289544
 Method Test Parameter: SX-AM
 Matrix: SOIL
 SDG Number: NA W038543852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: QC spectra of reruns OK J06430

First Level Review: Pam Anderson

Date: 10.28.02



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2289544

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: Rept Panel

Second Level Review: [Signature] Date: 10/29/02

Clouseau Nonconformance Memo



NCM #: J06430	Classification: Anomaly
NCM Initiated By: Pam Anderson	Status: QAREVIEW
Date Opened: 10/28/02	Production Area: Environmental - Sep
Date Closed: N/A	Tests: Amiso by ALP
	Lot #'s (Sample #'s): J21170000 (473); J21170181 (1)
	QC Batch: 2289544
Nonconformance: Other (describe in detail)	
Subcategory: Other (explanation required)	

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	10/28/02	QC ROI spectra smeared. Whole batch was rerun. Rerun data good. Data accepted.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	10/28/02	Samples rerun. Will watch for a trend.

Approval History

Name	Date Approved:	Position
Pam Anderson	10/28/02	

Data Review Checklist
RADIOCHEMISTRY
First Level Review

P

Lot Number: J2 EDU187
 Client ID: BHS
 Due Date: 10/18/02
 QC Batch Number: 206072
 Method Test Parameter: SD-Pu
 Matrix: Soil
 SDG Number: W03852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?	✓		
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?			✓
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: Preston Smith Date: 10/14/02



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260472

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?	✓		
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Bob M. [Signature] Date: 10/14/02

Data Review Checklist
RADIOCHEMISTRY
First Level Review

P

Lot Number: J2I170181
 Client ID: BHF
 Due Date: 10/8/02
 QC Batch Number: J2Iad474 (0474)
 Method Test Parameter: SR-LI250
 Matrix: SOIL
 SDG Number: _____

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?			✓
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: Preston Smith Date: 10/10/02



STL

Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 2260474

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: [Signature]

Date: 10/11/02

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2I170181
 Client ID: BH2
 Due Date: 10-8-02
 QC Batch Number: 2260475
 Method Test Parameter: GAMM
 Matrix: Soil
 SDG Number: W03852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓	✓	
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓	✓	
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?			✓
E. Other			
1. Are all Nonconformances included and noted? <u>J06205</u>	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: Eu-152 identification rejected by Abundance
CRITERIA.

First Level Review: [Signature] Date: 9-29-02

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260475

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓	✓	
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?	✓		✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: Dup a result of sample
U-238 dup out of limits
U-238 PWP @ lower abundance; written comments

Second Level Review: Bob M. Dwyer Date: 9/29/02

Clouseau Nonconformance Memo

SEVERN
TRENT
SERVICES

NCM #: J06205	Classification: Anomaly
NCM Initiated By: Dale OConnell	Status: QAREVIEW
Date Opened: 09/29/02	Production Area: Environmental - Prep
Date Closed: N/A	Tests: Gamma by GER
	Lot #'s (Sample #'s): J21170000 (475); J21170181 (1)
	QC Batch: 2260475

Nonconformance: Insufficient sample volume for QC
Subcategory: Insufficient sample volume to prepare MS/MSD or duplicate

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Dale OConnell	09/29/02	There was insufficient sample volume provided to prepare a duplicate. U-238DHP accuracy out of limits. Client requested U-238DHP at lower abundance, therefor erratic recoveries and higher MDA.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Dale OConnell	09/29/02	Precision determination achieved by recounting sample on a different detector. Report results.

Approval History

<u>Name</u>	<u>Date Approved:</u>	<u>Position</u>
Dale OConnell	09/29/02	

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2E 170187 P
 Client ID: BHI
 Due Date: 10/8/02
 QC Batch Number: 2268476
 Method Test Parameter: TH-TSR
 Matrix: SOIL
 SDG Number: W03852

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?			✓
5. Were raw counts reviewed for anomalies?		✓	
E. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: Pam Anderson Date: 10-4-02

SEVERN
TRENT **STL**

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260476

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Beth M. Taylor Date: 10/6/02

SEVERN**TRENT****SERVICES**

Richland Laboratory
Data Review Check List
METALS

<u>Work Order Number(s):</u> F8C3M		<u>BATCH #</u> 2260477		
<u>Lab Sample Numbers or SDG:</u> W63852		<u>LOT #</u> J21170181		
<u>Method/Test/Parameter:</u> CR+6 IN SOIL		RICHMC5005 R.6		
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank(ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			✓
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			✓
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
D. QC Samples				
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	✓
5. ICP only: One serial dilution performed per SDG?			✓	✓
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	✓
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	✓

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted?			✓	✓
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response:

C1) PbCrO4 SPIKE OF E8C3MMA REQUIRED X 20 DILUTION

Analyst: SM. Falco

Date: 10/15/02

Second-Level Review: [Signature]

Date: 10-17-02

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2260477

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?			✓
3. Are the correct isotopes reported?			✓
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?			✓
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?			✓
8. Do the MS/MSD results and yields meet acceptance criteria?	✓		
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Bob M. [Signature] Date: 10/17/02

CHAIN OF CUSTODY

U-21070

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B01-054-010		Page 1 of 1			
Collector D.Shea/R.Nielson		Company Contact D.Shea		Telephone No. 521-6014		Project Coordinator KESSNER, JH		Price Code 8L		Data Turnaround 21 Days		
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location pipelines campaign 2 verification			SAF No. B01-054		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 97-079		Field Logbook No. EL-1548-2		COA R100BC2600		Method of Shipment Government Vehicle						
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. NA			Bill of Lading/Air Bill No. NA							
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially radiologically contaminated Tie to J003M7 Special Handling and/or Storage Cool 4°C				Preservation	Cool 4C	Cool 4C	None	None	None			
				Type of Container	G/P	G/P	G/P	G/P	G/P			
				No. of Container(s)	1	1	1	1	1			
				Volume	250mL	60mL	500mL	60mL	20mL			
SDG W03852 SAMPLE ANALYSIS Tue 10-8 J2I170181				ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Activity Scan				
Sample No.	Matrix *	Sample Date	Sample Time									
J004L8 E8C3M	SOIL	9/16/02	1450	✓	✓	✓	✓	✓				
J004L9	SOIL	QWS 9/16/02										
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From Dowsher Dowsher		Date/Time 9/16/02 1645		Received By/Stored In Fridy, IA		Date/Time 9/16/02 1645		(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) (2) Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 - Total Sr; Nickel-63 DWS 9/13/02 tie to J003M7 Personnel not available to relinquish samples from the 3728 Ref # [initials] on 9/17/02				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From JCF 1-A 3728		Date/Time 9-17-02		Received By/Stored In Karl [unclear]		Date/Time 9-17-02						
Relinquished By/Removed From Karl R. [unclear]		Date/Time 9-17-02		Received By/Stored In Rhinehart		Date/Time 9/17/02						
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				

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1892

R208137-19

J003M7

DATA SHEET

SDG <u>7342</u>	Client/Case no <u>Hanford</u>	SDG <u>H1892</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R208137-19</u>	Client sample id <u>J003M7</u>	
Dept sample id <u>7342-019</u>	Location/Matrix <u>Campaign 2 Variance</u>	<u>SOLID</u>
Received <u>08/28/02</u>	Collected/Weight <u>08/26/02 09:48</u>	<u>1058 g</u>
% solids <u>100.0</u>	Custody/SAF No: <u>B01-052-123</u>	<u>B01-052</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.092	0.050	U	GAM
Cesium 137	10045-97-3	0.099	0.045	0.058	0.10	J	GAM
Europium 152	14683-23-9	1.15	0.18	0.16	0.10		GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Americium 241	14596-10-2	U		0.48		U	GAM

100 B/C Area Effluent Pipe, & Prox.

*Rad Screen for Campaign II verification
See B01-054-009 & 010*

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/09/02</u>

Sample Check-in List

Date/Time Received: 9/17/02 @ 10:18 CR
 Client: BHI SDG #: 2W03852 NA [] SAF #: B01-054 NA []
 Work Order Number: J2I7D181 Chain of Custody # B01-054-010
 Shipping Container ID: AT ERC-97-079 Air Bill # N/A
CR 9/17/02

1. Custody Seals on shipping container intact? NA [] Yes No []
2. Custody Seals dated and signed? NA [] Yes No []
3. Chain of Custody record present? Yes No []
4. Cooler temperature: 40C NA [] 5. Vermiculite/packing materials is NA [] Wet [] Dry
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? NA Yes [] No []
8. Samples have:
 - tape hazard labels
 - custody seals appropriate samples labels
9. Samples are:
 - in good condition leaking
 - broken have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA pH < 2 [] pH > 2 []
11. Sample Location, Sample Collector Listed? * Yes No []
 *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [] No
13. Description of anomalies (include sample numbers): _____

Sample Custodian: Michael Lead / Richard Date: 9/17/02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

**SEVERN
TRENT**

STL

P

PRIORITY

*** RE-ANALYSIS REQUEST ***

DUE DATE 10/8/02

CUSTOMER BH1
ANALYSIS Am
MATRIX Soil
LOT NUMBER J2I 170 181
SAMPLE DELIVERY GROUP W03852
OLD BATCH NUMBER 2260473
NEW BATCH NUMBER 2289544

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) E8C3M1AF	
2) E8C3M1AK	
3) E8D231AA	
4) E8D231AC	
5) E8D231AD	
6) E8D231AE	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	
LAB QC ID	Assigned with new batch.

10/18/02 3:17:26 PM

Sample Preparation/Analysis

Balance Id:1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

6l PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5013
SX Americium-241 by Alpha Spec
5l CLIENT: HANFORD

PRIORITY

Pipet #: *NA*

Report Due: 10/08/2002

Sep1 DT/Tm Tech: *NA*

Batch: 2289544 SOIL pCi/g PM, Quote: BG1, 27038

Sep2 DT/Tm Tech: *NA*

SEQ Batch, Test: 2260472, 6ISO 2260472, 6ISO 2260477 DWEA, 2260478 88OV, 2289544 6ISX, All Tests: 2260472 6ISO, 2260473 6ISX, 2260474 7SSR, 2260475 AXTA, 2260476 CHTH,

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
-----------------------------------	----------------	--------------------------	---------------------	---------------------	----------------	-------------	------------------------------	-----------------------

1 E8C3M-2-AF J2I170181-1-SAMP	2.01g,in	AMTC1280	09/23/02 08/08/02,r		200			
----------------------------------	----------	----------	------------------------	--	-----	--	--	--

09/16/2002 14:50 AmtRec: 500P,2X60G,20ML #Containers: 4 Scr Rst: Alpha: 2.41E+01 pCi/g Beta: 2.44E+01 pCi/g

2 E8C3M-2-AK-X J2I170181-1-DUP	2.02g,in	AMTC1281	09/23/02 08/08/02,r					
-----------------------------------	----------	----------	------------------------	--	--	--	--	--

09/16/2002 14:50 AmtRec: 500P,2X60G,20ML #Containers: 4 Scr Rst: Alpha: 2.41E+01 pCi/g Beta: 2.44E+01 pCi/g

3 E8D23-2-AA-B J2I170000-473-BLK	2.0g,in	AMTC1282	09/23/02 08/08/02,r					
-------------------------------------	---------	----------	------------------------	--	--	--	--	--

09/16/2002 14:50 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

4 E8D23-2-AC-C J2I170000-473-LCS	2.0g,in	AMSJ0146	07/27/02 02/05/02,r					
-------------------------------------	---------	----------	------------------------	--	--	--	--	--

09/16/2002 14:50 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

5 E8D23-2-AD-BX J2I170000-473-MBLK	2.0g,in	AMTC1283	09/23/02 08/08/02,r					
---------------------------------------	---------	----------	------------------------	--	--	--	--	--

09/16/2002 14:50 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

6 E8D23-2-AE-CM J2I170000-473-MLCS	1.97g,in	AMSJ0150	10/13/02 08/08/02,r					
---------------------------------------	----------	----------	------------------------	--	--	--	--	--

09/16/2002 14:50 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

47

10/18/02 3:17:27 PM

Sample Preparation/Analysis

Balance Id:1120373922

6I PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)
SX Americium-241 by Alpha Spec
5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

Sep1 DT/Tm Tech:

Batch: 2289544

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
-------------------------------------	-------------------	-----------------------------	------------------------	------------------------	-------------------	----------------	---------------------------------	--------------------------

Comments: *Samples were rechecked 10-18-02*
Ottawa sand used for samples E8D23-DY + W 10-21-02

All Clients for Batch:

127642, BECTEL HANFORD, INC. Bechtel Hanford, Inc. , BGI, 27038

E8C3M2AF-SAMP Constituent List:												
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	
E8D232AA-BLK:												
Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	
E8D232AC-LCS:												
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	
E8D232AD-MBLK:												
Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	
E8D232AE-MLCS:												
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	

E8C3M2AF-SAMP Calc Info:												
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B			
E8D232AA-BLK:												
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B			
E8D232AC-LCS:												
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B			
E8D232AD-MBLK:												
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B			
E8D232AE-MLCS:												
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B			

48

10/28/02 1:16:39 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/28/02, 10/29/02, Batch: '2289544', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2289544				
AC	CalcC	WAGNERJ	10/17/02 4:52:35 PM	
SC		OConnellD	IsBatched	10/16/02 5:05:05 PM
SC		WAGNERJ	InPrep2	10/17/02 4:52:35 PM
SC		WAGNERJ	InPrep2	10/17/02 4:52:57 PM
SC		WAGNERJ	Prep2C	10/21/02 3:42:00 PM
SC		HAMMERL	InSep1	10/23/02 3:07:12 PM
SC		DOWNEYS	Sep2C	10/26/02 3:55:01 AM
SC		BlackCL	InCnt1	10/26/02 8:10:05 AM
SC		BlackCL	CalcC	10/26/02 2:31:30 PM
AC		WAGNERJ	10/17/02 4:52:57 PM	
AC		WAGNERJ	10/21/02 3:42:00 PM	
AC		HAMMERL	10/23/02 3:07:12 PM	
AC		DOWNEYS	10/26/02 3:55:01 AM	
AC		BlackCL	10/26/02 8:10:05 AM	
AC		BlackCL	10/26/02 2:31:30 PM	

49

AC: Accepting Entry; SC: Status Change

10/3/02 9:25:29 AM

Sample Preparation/Analysis

Balance Id:1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

6I PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)
SO Plutonium-238,239/40 by Alpha Spec
SI CLIENT: HANFORD

PRIORITY Net #: *NA*
Sep1 DT/Tm Tech: *NA*

Report Due: 10/08/2002 *W03852*

Batch: 2260472 SOIL pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech: *NA*

SEQ Batch, Test: 2260473, 6ISX 2260473, 6ISX

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AE J21170181-1-SAMP	2.05g,in		PATB2499 09/13/02 09/10/02,r		200			
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML	#Containers: 4					Scr Rst: Alpha: 2.41E+01 pCi/g Beta: 2.44E+01 pCi/g	
2 E8C3M-1-AJ-X J21170181-1-DUP	2.03g,in		PATB2500 09/13/02 09/10/02,r					
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML	#Containers: 4					Scr Rst: Alpha: 2.41E+01 pCi/g Beta: 2.44E+01 pCi/g	
3 E8D21-1-AA-B J21170000-472-BLK	2.0g,in		PATB2501 09/13/02 09/10/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1					Scr Rst: Alpha: Beta:	
4 E8D21-1-AC-C J21170000-472-LCS	2.0g,in		PUSK0496 09/20/02 05/31/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1					Scr Rst: Alpha: Beta:	
5 E8D21-1-AD-BX J21170000-472-MBLK	1.97g,in		PATB2502 09/13/02 09/10/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1					Scr Rst: Alpha: Beta:	
6 E8D21-1-AE-CM J21170000-472-MLCS	2.0g,in		PUSK0497 09/20/02 05/31/02,r					
09/16/2002 14:50	AmtRec:	#Containers: 1					Scr Rst: Alpha: Beta:	

00

10/3/02 9:25:30 AM

Sample Preparation/Analysis

Balance Id:1120373922

6I PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)
SO Plutonium-238,239/40 by Alpha Spec

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

5I CLIENT: HANFORD

Sep1 DT/Tm Tech: _____

Batch: 2260472

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
-----------------------------------	----------------	--------------------------	---------------------	---------------------	----------------	-------------	------------------------------	-----------------------

Comments: Samples were muffled. 2/10-3-02
 Ottawa sand used for samples E8D21 BX & CM. 2/10-3-02
 0.5 mL neodymium + 1 mL Iron carrier added to E8D21 B, C, BX & CM. 2/10-3-02

All Clients for Batch:

127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc.

, BGI, 27038

E8C3M1AE-SAMP Constituent List:

PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						
E8D211AA-BLK:											
PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:	UCL:	RPD:
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						
E8D211AC-LCS:											
PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
E8D211AD-MBLK:											
PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:	UCL:	RPD:
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						
E8D211AE-MLCS:											
PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

E8C3M1AE-SAMP Calc Info:

Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
E8D211AA-BLK:				
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
E8D211AC-LCS:				
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
E8D211AD-MBLK:				
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
E8D211AE-MLCS:				
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B

5
11

10/14/2002 10:29:29 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/14/2002, 10/15/2002, Batch: '2260472', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2260472				
AC	Rev1C	BELSITOB	9/19/2002 12:45:12	
SC		WagarR	IsBatched	9/17/2002 5:33:06 PM
SC		BELSITOB	InPrep	9/19/2002 12:45:12 PM
SC		BELSITOB	Prep1C	9/23/2002 10:52:30 AM
SC		WAGNERJ	InPrep2	9/30/2002 1:15:38 PM
SC		WAGNERJ	InPrep2	9/30/2002 1:16:08 PM
SC		WAGNERJ	Prep2C	10/4/2002 1:12:11 PM
SC		HAMMERL	InSep1	10/6/2002 8:01:59 AM
SC		ThompsonJ	InSep1	10/10/2002 1:31:26 PM
SC		ThompsonJ	Sep1C	10/11/2002 4:31:00 PM
SC		DOWNEYS	InSep2	10/12/2002 4:41:56 AM
SC		DOWNEYS	Sep2C	10/12/2002 12:02:34 PM
SC		IOVINC	InCnt1	10/12/2002 2:09:19 PM
SC		BlackCL	CalcC	10/14/2002 6:55:08 AM
SC		SMITHP	Rev1C	10/14/2002 10:28:11 AM
AC		BELSITOB	9/23/2002 10:52:30	
AC		WAGNERJ	9/30/2002 1:15:38 PM	
AC		WAGNERJ	9/30/2002 1:16:08 PM	
AC		WAGNERJ	10/4/2002 1:12:11 PM	
AC		HAMMERL	10/6/2002 8:01:59	
AC		ThompsonJ	10/10/2002 1:31:26	
AC		ThompsonJ	10/11/2002 4:31:00	
AC		DOWNEYS	10/12/2002 4:41:56	
AC		DOWNEYS	10/12/2002 12:02:34	
AC		IOVINC	10/12/2002 2:09:19	
AC		BlackCL	10/14/2002 6:55:08	
AC		SMITHP	10/14/2002 10:28:11	

ICOC_RADCALC v4.5.3.2
 RICH-RC-5013 REVISION 4
 RICH-RC-5013 REVISION 4
 RICH-RC-5013 REVISION 4
 RICH-RC-5019 REVISION 2
 RICH-RC-5019 REVISION 2
 RICH-RC-5080 REVISION 0
 RICH-RC-5080 REVISION 0
 RICH-RC-5080 REVISION 0
 RICH-RC-5039 REVISION 3
 RICH-RC-5039 REVISION 3
 RICH-RD-0008 REVISION 2
 RICH-RD-0008 REVISION 2
 RICH-RC-0002 REVISION 5

52

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

10/3/02 9:20:29 AM

Sample Preparation/Analysis

Balance Id:11,1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

7S Uiso PrpRC5013/RC5019, SepRC5079(5039)
UR Uranium-234,235,238 by Alpha Spec
SI CLIENT: HANFORD

Pipet #: _____

Report Due: 10/08/2002

Sep1 DT/Tm Tech:

Batch: 2260474 SOIL pCi/g PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

W03852

Work Order, Lot, Sample Date	Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AC			1.0g,in	UITC7900					
J21170181-1-SAMP				09/19/02		200			
	09/16/2002 14:50		AmtRec: 500P,2X60G,20ML	#Containers: 4				Scr Rst: Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
2 E8C3M-1-AL-X			0.99g,in	UITC7901					
J21170181-1-DUP				09/19/02					
	09/16/2002 14:50		AmtRec: 500P,2X60G,20ML	#Containers: 4				Scr Rst: Alpha: 2.41E+01 pCi/g	Beta: 2.44E+01 pCi/g
3 E8D24-1-AA-B			1.0g,in	UITC7902					
J21170000-474-BLK				09/19/02					
	09/16/2002 14:50		AmtRec:	#Containers: 1				Scr Rst:	Alpha: Beta:
4 E8D24-1-AC-C			1.0g,in	UISH0149					
J21170000-474-LCS				09/18/02					
	09/16/2002 14:50		AmtRec:	#Containers: 1				Scr Rst:	Alpha: Beta:

Comments: Samples were muffled. 2 10-3-02
Converted Samples 3X with can HCL. 2 10-4-02

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG1, 27038

E8C3M1AC-SAMP Constituent List:											
U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:
E8D241AA-BLK:											
U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:

10/3/02 9:20:30 AM

Sample Preparation/Analysis

Balance Id:11,11,11,11,1120373922

7S Uiso PrpRC5013/RC5019, SepRC5079(5039)
SR Uranium-234,235,238 by Alpha Spec
5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

Sep1 DT/Tm Tech: _____

Batch: 2260474

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Ini/Date
--------------------------------------	-------------------	-----------------------------	------------------------	------------------------	-------------------	----------------	---------------------------------	-------------------------

E8D241AC-LCS:											
U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	Uranium	RDL:	pCi/g	LCL:70	UCL:130	RPD:35

E8C3M1AC-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D241AA-BLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D241AC-LCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

10/10/2002 1:16:56 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/10/2002, 10/11/2002, Batch: '2260474', User: 'All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
2260474				
AC	Rev1C	BELSITOB	9/19/2002 12:45:23	
SC		WagarR	IsBatched 9/17/2002 5:33:06 PM	ICOC_RADCALC v4.5.3.2
SC		BELSITOB	InPrep 9/19/2002 12:45:23 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C 9/23/2002 10:52:39 AM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	InPrep2 9/30/2002 1:16:31 PM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	Prep2C 10/4/2002 1:08:39 PM	RICH-RC-5019 REVISION 2
SC		HAMMERL	InSep1 10/6/2002 8:01:13 AM	RICH-RC-5079 REVISION 1
SC		McPHERONC	InSep2 10/8/2002 9:01:32 AM	RICH-RC-5039 REVISION 3
SC		McPHERONC	InSep2 10/9/2002 7:53:06 AM	RICH-RC-5039 REVISION 3
SC		McPHERONC	Sep2C 10/9/2002 7:53:44 AM	RICH-RC-5039 REVISION 3
SC		BlackCL	InCnt1 10/9/2002 8:14:22 AM	RICH-RD-0008 REVISION 2
SC		BlackCL	CalcC 10/9/2002 12:43:00 PM	RICH-RD-0008 REVISION 2
SC		SMITHP	Rev1C 10/10/2002 1:12:33 PM	RICH-RC-0002 REVISION 5
AC		BELSITOB	9/23/2002 10:52:39	
AC		WAGNERJ	9/30/2002 1:16:31 PM	
AC		WAGNERJ	10/4/2002 1:08:39 PM	
AC		HAMMERL	10/6/2002 8:01:13	
AC		McPHERONC	10/8/2002 9:01:32	
AC		McPHERONC	10/9/2002 7:53:06	
AC		McPHERONC	10/9/2002 7:53:44	
AC		BlackCL	10/9/2002 8:14:22	
AC		BlackCL	10/9/2002 12:43:00	
AC		SMITHP	10/10/2002 1:12:33	

AC: Accepting Entry; SC: Status Change

55

9/17/2002 5:33:17 PM

Sample Preparation/Analysis

Balance Id: PB3001-S

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
SI CLIENT: HANFORD

PRIORITY

Pipet #: N/A

Report Due: 10/08/2002

WO 3852

Sep1 DT/Tm Tech:

Batch: 2260475 SOIL

pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: MB

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AH J21170181-1-SAMP	385.5	(9)			5200	600	65	G5	9/24/0347	9/23/2002
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:	Beta:			
2 E8C3M-1-AM-X J21170181-1-DUP	385.5					G1		9/26/0625	9/25/2002	
09/16/2002 14:50	AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha:	Beta:			
3 E8D25-1-AA-BX J21170000-475-MBLK	348.0	OSBK				G1		9/25/2002 8580	9/24/2002	
09/16/2002 14:50	AmtRec:		#Containers: 1		Scr Rst:	Alpha:	Beta:			
4 E8D25-1-AC-CM J21170000-475-MLCS	200.01	CAL 491			5200	G2		9/25/2002 0459	9/24/2002	
09/16/2002 14:30	AmtRec:		#Containers: 1		Scr Rst:	Alpha:	Beta:			

Comments: recount dup on different detector E8C3M-1-AH

All Clients for Batch:
127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc. , BG1, 27038

E8C3M1AH-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

E8D251AA-MBLK:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

E8D251AC-MLCS:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt,
Richland Wa r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

9/17/2002 5:33:18 PM

Sample Preparation/Analysis

Balance Id: _____

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
SI CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

Sep1 DT/Tm Tech: _____

Batch: 2260475

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: _____

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
Cs-137 RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	K-40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35
Ra-226 RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
RA-228DA RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35

E8C3M1AH-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D251AA-MBLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D251AC-MLCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

9/29/02 9:51:02 AM

ICOC Fraction Transfer/Status Report

ByDate: 8/30/02, 9/30/02, Batch: '2260475', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
---------	----------	-----------	-----------	----------

2260475

AC	CalcC	BELSITOB	9/23/02 10:52:20 AM	
SC		WagarR	IsBatched	9/17/02 5:33:06 PM
SC		BELSITOB	Prep1C	9/23/02 10:52:20 AM
SC		BELSITOB	Prep1C	9/23/02 10:52:23 AM
SC		IOVINC	InCnt1	9/23/02 11:09:51 AM
SC		BlackCL	CalcC	9/26/02 8:48:04 AM
AC		BELSITOB	9/23/02 10:52:23 AM	
AC		IOVINC	9/23/02 11:09:51 AM	
AC		BlackCL	9/26/02 8:48:04 AM	

ICOC_RADCALC v4.5.3.2
 RICH-RC-5013 REVISION 4
 RICH-RC-5017 REVISION 3
 RICH-RD-0007 REVISION 3
 RICH-RD-0007 REVISION 3

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

58

9/24/02 9:51:09 AM

Sample Preparation/Analysis

Balance Id:1120373922

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

CH Sr-Total PrpRC5013, SepRC5006
TH Total Strontium by GPC
SI CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002 **WO3852**

Sep1 DT/Tm Tech: **10/3/02/1256/EP5**

Batch: 2260476 SOIL pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WAGNERJ

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 E8C3M-1-AD J21170181-1-SAMP	5.99g,in		SRTA7951 08/05/02 06/03/02,r		1.5	0.0741g	50	31A	1925	10/3/2002010
09/16/2002 14:50		AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst: Alpha: 2.41E+01 pCi/g		Beta: 2.44E+01 pCi/g		
2 E8C3M-1-AN-X J21170181-1-DUP	6.03g,in		SRTA7952 08/05/02 06/03/02,r		0.0788g			31B	1925	10/3/2002010
09/16/2002 14:50		AmtRec: 500P,2X60G,20ML		#Containers: 4		Scr Rst: Alpha: 2.41E+01 pCi/g		Beta: 2.44E+01 pCi/g		
3 E8D28-1-AA-B J21170000-476-BLK	6.0g,in		SRTA7953 08/05/02 06/03/02,r		0.0915g			31C	1925	10/3/2002010
09/16/2002 14:50		AmtRec:		#Containers: 1		Scr Rst:		Alpha: Beta:		
4 E8D28-1-AC-C J21170000-476-LCS	6.0g,in		STSB0646 09/16/02 06/03/02,r		0.0954g			31D	1925	10/3/2002010
09/16/2002 14:50		AmtRec:		#Containers: 1		Scr Rst:		Alpha: Beta:		

Comments:

All Clients for Batch:

127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc.

, BG1, 27038

E8C3M1AD-SAMP Constituent List:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
E8D281AA-BLK:					
Sr-90	RDL:1	pCi/g	LCL:	UCL:	RPD:
E8D281AC-LCS:					
Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

E8C3M1AD-SAMP Calc Info:

9/24/02 9:51:11 AM

Sample Preparation/Analysis

Balance Id:1120373922

CH Sr-Total PrpRC5013, SepRC5006
TH Total Strontium by GPC
SI CLIENT: HANFORD

Pipet #: _____

Report Due: 10/08/2002

PRIORITY

Sep1 DT/Tm Tech: _____

Batch: 2260476

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
Uncert Level (#s) : 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y		ODRs: B				
88D281AA-BLK:										
Uncert Level (#s) : 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y		ODRs: B				
88D281AC-LCS:										
Uncert Level (#s) : 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y		ODRs: B				

10/4/02 1:10:51 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/4/02, 10/5/02, Batch: '2260476', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	2260476				
AC		CalcC	BELSITOB	9/19/02 12:45:16 PM	
SC			WagarR	IsBatched	9/17/02 5:33:06 PM
SC			BELSITOB	InPrep	9/19/02 12:45:16 PM
SC			BELSITOB	Prep1C	9/23/02 10:52:43 AM
SC			WAGNERJ	InPrep2	9/23/02 11:36:15 AM
SC			WAGNERJ	Prep2C	9/25/02 10:59:36 AM
SC			SMITHP	InSep1	10/2/02 3:54:40 PM
SC			SMITHP	Sep1C	10/3/02 3:21:22 PM
SC			DAWKINSO	InCnt1	10/3/02 5:26:35 PM
SC			BlackCL	CalcC	10/4/02 7:53:50 AM
AC			BELSITOB	9/23/02 10:52:43 AM	
AC			WAGNERJ	9/23/02 11:36:15 AM	
AC			WAGNERJ	9/25/02 10:59:36 AM	
AC			SMITHP	10/2/02 3:54:40 PM	
AC			SMITHP	10/3/02 3:21:22 PM	
AC			DAWKINSO	10/3/02 5:26:35 PM	
AC			BlackCL	10/4/02 7:53:50 AM	

ICOC_RADCALC v4.5.3.2
 RICH-RC-5013 REVISION 4
 RICH-RC-5013 REVISION 4
 RICH-RC-5013 REVISION 4
 RICH-RC-5013 REVISION 4
 RICH-RC-5006 REVISION 4
 RICH-RC-5006 REVISION 4
 RICH-RD-0003 REVISION 3
 RICH-RD-0003 REVISION 3

AC: Accepting Entry; SC: Status Change

9/17/2002 5:33:18 PM

Sample Preparation/Analysis

Balance Id:

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)

PRIORITY

Pipet #:

Report Due: 10/08/2002

W03852

51 CLIENT: HANFORD

Sep1 DT/Tm Tech:

Batch: 2260477 SOIL

mg/kg

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
--------------------------------------	-------------------	-----------------------------	------------------------	------------------------	--------------	--------------------	-------------------	----------------	---------------------------------	--------------------------

1 E8C3M-1-AA
J21170181-1-SAMP

09/16/2002 14:50 AmtRec: 500P,2X60G,20ML #Containers: 4 Scr Rst: Alpha: Beta:

2 E8C3M-1-AP-S
J21170181-1-MS

09/16/2002 14:50 AmtRec: 500P,2X60G,20ML #Containers: 4 Scr Rst: Alpha: Beta:

3 E8C3M-1-AQ-X
J21170181-1-DUP

09/16/2002 14:50 AmtRec: 500P,2X60G,20ML #Containers: 4 Scr Rst: Alpha: Beta:

4 E8C3M-1-AR-S
J21170181-1-MS

09/16/2002 14:50 AmtRec: 500P,2X60G,20ML #Containers: 4 Scr Rst: Alpha: Beta:

5 E8D3A-1-AA-B
J21170000-477-BLK

09/16/2002 14:50 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

6 E8D3A-1-AC-C
J21170000-477-LCS

09/16/2002 14:50 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

9/17/2002 5:33:18 PM

Sample Preparation/Analysis

Balance Id: _____

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
SI CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 10/08/2002

Sep1 DT/Tm Tech: _____

Batch: 2260477

mg/kg

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: _____

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
--------------------------------------	-------------------	-----------------------------	------------------------	------------------------	--------------	--------------------	-------------------	----------------	---------------------------------	--------------------------

Comments:

All Clients for Batch:

127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc.

BG1, 27038

E8C3M1AA-SAMP Constituent List:

E8C3M1AP-MS Constituent List:

E8C3M1AR-MS:

E8D3A1AA-BLK:

E8D3A1AC-LCS:

E8C3M1AA-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8C3M1AP-MS Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8C3M1AR-MS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D3A1AA-BLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

E8D3A1AC-LCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B



STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel 314 298 8566
Fax 314 298 8757
www.st-linc.com

ANALYTICAL REPORT

PROJECT NO. 100B/C EFFLUENT

B01-054

Lot #: F2I180167

SDG #: W03852

Joan Kessner

Bechtel Hanford, Inc.
3190 George Washington Way
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

A handwritten signature in cursive script that reads "M Ward".

MARTI WARD
Project Manager

September 26, 2002

STL St. Louis is a part of Severn Trent Laboratories, Inc.

LOT # F2I180167

W03852



CASE NARRATIVE

STL St. Louis

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

September 27, 2002

Attention: Joan Kessner

Project Number	:	45892
SAF	:	B01-054
SDG	:	W03852
Number of Samples	:	one
Sample Matrix	:	soil
Data Deliverable	:	Summary
Date SDG Closed	:	September 17, 2002

II. Introduction

On September 18, 2002, one (1) "solid" sample was received by STL—St. Louis for chemical analysis. The samples were received at the St. Louis lab within temperature criteria. See the COC and CUR forms for details of sample condition and temperature. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. This report is not complete without the Case Narrative. Results are reported "as received"; i.e. wet weight, unless otherwise noted on the data sheets.

Analyses requested: see the attached methods summary sheet

Deviation from Request: none

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
 QLCS- Quality Control Laboratory Control Sample, Blank Spike
 MS- Matrix Spike.
 DUP- Matrix Duplicate
 MSD- Matrix Spike Duplicate.



Bechtel Hanford Incorporated
September 27, 2002
Project Number: 45892
SDG: W03852
Page 2

STL St. Louis

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Metals: A Laboratory Control Sample, Matrix Spike, Matrix Spike Duplicate and Method Blank were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with this data.

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

Reviewed and approved:

A handwritten signature in cursive script that reads "Marti Ward".

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F2I180167

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
B8EP1	001	J004L8	09/16/02	14:50

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F2I180167

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

References:

- MCAWW "Methods for Chemical Analysis of Water and Wastes",
EPA-600/4-79-020, March 1983 and subsequent revisions.
- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical
Methods", Third Edition, November 1986 and its updates.

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 100B/C EFFLUENT
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-054
AMOUNT REC'D: 250G,VIAL2
STORAGE LOC: S162
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
JSAF MATRIX:
SAMPLE ID: J004L8
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 45892
LAB ID: F-2I180167-001
WORK ORDER: E8EP1
RECEIVING DATE: 9/17/02
SAMPLING DATE: 9/16/02
ANALYTICAL DUE DATE: 10/07/02N
REPORT DUE DATE: 10/08/02
PRIORITY: 20
SAMPLING TIME: 14:50
RECEIVING TIME: 10:18

SDG# : W03852

Beginning Depth: .00 Ending Depth: .00

<u>***** ANALYSIS *****</u>				
	<u>WRK</u>	<u>REQUEST</u>	<u>EXTRACTION</u>	<u>ANALYSIS</u>
	<u>LOC</u>	<u>DATE</u>	<u>EXP DATE</u>	<u>EXP DATE</u>
RAD SCREEN	06	9/18/02	0/00/00	9/16/02
IN-HOUSE RAD SCREEN (A-RA-ZV-01) E8EP1-1-AA Protocol: A				QC Program: STANDARD TEST SET
Inductively Coupled Plasma (6010B Trace)	06	9/18/02	0/00/00	3/15/03
METALS, TOTAL - Soils MT6010_S CR,PB (A-46-QM-01) E8EP1				Protocol: A QC Program: STANDARD TEST SET
Mercury (7471A, Cold Vapor) - Solids	06	9/18/02	0/00/00	10/14/02
METALS, TOTAL (Method Exclusive) - Solids M7471_S HG (A-70-O9-01) E8EP1				Protocol: A QC Program: STANDARD TEST SET
Moisture, Percent (160.3)	06	9/18/02	0/00/00	12/24/02
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-WM-01) E8EP1-1-AP Protocol: A				QC Program: STANDARD TEST SET

STL St. Louis

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/18/02
Time: 11:13:22
User Id.: ZAHNERM

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 100B/C EFFLUENT
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-054
AMOUNT REC'D: 250G, VIAL2
STORAGE LOC: S162
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
USAF MATRIX:
SAMPLE ID: J004L8
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 45892
LAB ID: F-2I180167-001-D
WORK ORDER: E8EP1 MSD
RECEIVING DATE: 9/17/02
SAMPLING DATE: 9/16/02
ANALYTICAL DUE DATE: 10/07/02N
REPORT DUE DATE: 10/08/02
PRIORITY: 20
SAMPLING TIME: 14:50
RECEIVING TIME: 10:18

SDG# : W03852

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

	<u>WRK</u>	<u>REQUEST</u>	<u>EXTRACTION</u>	<u>ANALYSIS</u>
	<u>LOC</u>	<u>DATE</u>	<u>EXP DATE</u>	<u>EXP DATE</u>
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Soils MT6010_S CR,PB (A-46-QM-01) E8EP1 Protocol: A QC Program: STANDARD TEST SET	06	9/18/02	0/00/00	3/15/03
Mercury (7471A, Cold Vapor) - Solids METALS, TOTAL (Method Exclusive) - Solids M7471_S HG (A-70-O9-01) E8EP1 Protocol: A QC Program: STANDARD TEST SET	06	9/18/02	0/00/00	10/14/02

STL St. Louis

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/18/02
Time: 11:13:23
User Id.: ZAHNERM

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 100B/C EFFLUENT
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-054
AMOUNT REC'D: 250G,VIAL2
STORAGE LOC: S162
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
JSAF MATRIX:
SAMPLE ID: J004L8
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 45892
LAB ID: F-2I180167-001-S
WORK ORDER: E8EP1 MS
RECEIVING DATE: 9/17/02
SAMPLING DATE: 9/16/02
ANALYTICAL DUE DATE: 10/07/02N
REPORT DUE DATE: 10/08/02
PRIORITY: 20
SAMPLING TIME: 14:50
RECEIVING TIME: 10:18

SDG# : W03852

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

	<u>WRK</u>	<u>REQUEST</u>	<u>EXTRACTION</u>	<u>ANALYSIS</u>
	<u>LOC</u>	<u>DATE</u>	<u>EXP DATE</u>	<u>EXP DATE</u>
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Soils MT6010_S CR,PB (A-46-QM-01) E8EP1 Protocol: A QC Program: STANDARD TEST SET	06	9/18/02	0/00/00	3/15/03
Mercury (7471A, Cold Vapor) - Solids METALS, TOTAL (Method Exclusive) - Solids M7471_S HG (A-70-09-01) E8EP1 Protocol: A QC Program: STANDARD TEST SET	06	9/18/02	0/00/00	10/14/02

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B01-054-010	Page 1 of 1
Collector D.Shea/R.Nielson	Company Contact D.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH		Price Code 8L	Data Turnaround 21 Days
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location pipelines campaign 2 verification		SAF No. B01-054	Air Quality <input type="checkbox"/>	
Ice Chest No. ERC 97-079	Field Logbook No. EL-1548-2	COA R100BC2600	Method of Shipment Government Vehicle			
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. NA	Bill of Lading/Air Bill No. NM			

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially radiologically contaminated Tie to J003m7 Special Handling and/or Storage Cool 4°C	Preservation	Cool 4C	Cool 4C	None	None	None	OR air/mo
	Type of Container	GP	GP	GP	GP	GP	
	No. of Container(s)	1	1	1	1	1	
	Volume	250mL	60mL	500mL	60mL	20mL	

SDG W03852 SAMPLE ANALYSIS True 10-8 J2I170181				ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Activity Scan
Sample No.	Matrix *	Sample Date	Sample Time					
J004LB	EBC3M	9/16/02	1450	✓	✓	✓	✓	✓
J004L9	SOIL	9/16/02						

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From Dowsher Dowsher	Date/Time 9/16/02 1645	Received By/Stored In Fridgen A	Date/Time 9/16/02 1645	(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) (2) Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Nickel-63 PWS 9/13/02 tie to J003m7 Personnel not available to relinquish samples from the 3728 Ref # A on 9/17/02			S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Dowsher Dowsher	Date/Time 1000	Received By/Stored In Kalt	Date/Time 9/17/02				
Relinquished By/Removed From Kalt	Date/Time 9/17/02	Received By/Stored In Rhineheart	Date/Time 9/17/02				
Relinquished By/Removed From Rhineheart	Date/Time 9/17/02	Received By/Stored In Missa Zahner	Date/Time 9/18/02 9:00				
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

OT # F2T180167

W03852

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1892

R208137-19

J003M7

DATA SHEET

SDG <u>7342</u>	Client/Case no <u>Hanford</u>	SDG <u>H1892</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R208137-19</u>	Client sample id <u>J003M7</u>	
Dept sample id <u>7342-019</u>	Location/Matrix <u>Campaign 2 Variance</u>	<u>SOLID</u>
Received <u>08/28/02</u>	Collected/Weight <u>08/26/02 09.48</u>	<u>1058 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>B01-052-123</u>	<u>B01-052</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		<u>0.092</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.099	0.045	0.058	0.10	J	GAM
Europium 152	14683-23-9	1.15	0.18	<u>0.16</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.23</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.20</u>	0.10	U	GAM
Americium 241	14596-10-2	U		0.48		U	GAM

100 B/C Area Effluent Pipe. & Prox.

*Rad Screen for Campaign II verification
See B01-054-009 & 010*

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>1.05</u>
Report date <u>09/09/02</u>



Sample Check-in List

Date/Time Received: 9/17/02 @ 10:18 CR
Client: BHI SDG #: 2W03852 NA [] SAF #: B01-054 NA []
Work Order Number: J2I70181 # 9-17-02 Chain of Custody # B01-054-010
Shipping Container ID: AT ERC-97-079 Air Bill # N/A
AR 9/17/02

- 1. Custody Seals on shipping container intact? NA [] Yes [X] No []
2. Custody Seals dated and signed? NA [] Yes [X] No []
3. Chain of Custody record present? Yes [X] No []
4. Cooler temperature: 40C NA [] 5. Vermiculite/packing materials is NA [] Wet [] Dry [X]
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? NA [X] Yes [] No []
8. Samples have: [X] tape [X] custody seals [X] hazard labels [X] appropriate samples labels
9. Samples are: [X] in good condition [] broken [] leaking [] have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH < 2 [] pH > 2 []
11. Sample Location, Sample Collector Listed? * Yes [X] No []
12. Were any anomalies identified in sample receipt? Yes [] No [X]
13. Description of anomalies (include sample numbers):

Sample Custodian: [Signature] / Richard Date: 9/17/02

Table with 4 columns: Client Sample ID, Analysis Requested, Condition, Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____



Lot No.: F2T180167
W03852

Condition Upon Receipt Form
St. Louis Laboratory

Client: Hanford
Quote No: 45892
Shipper/No: 7900 6778 7741

Date: 9/18/02 Time: 9:00
Initiated by: MMZ
COCRFA Numbers: X02-037-8, 1, 11

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see notes for explanation): B01-054-010

1. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in undamaged condition.	5. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample volume sufficient for analysis.
2. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received within 4°C ± 2°C* Record temperature: <u>3</u>	6. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received with Chain of Custody.
3. <input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Sample received with proper pH**.	7. <input checked="" type="radio"/> Y <input type="radio"/> N	Chain of Custody matches sample IDs on containers.
4. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in proper containers.	8. <input checked="" type="radio"/> Y <input type="radio"/> N	Custody seal received intact and tamper evident on cooler.
		9. <input checked="" type="radio"/> Y <input type="radio"/> N	Custody seal received intact and tamper evident on bottles.

* Temperature Variance Does Not Affect the Following Analyses: _____

** For DOE-AL (Pantex, LANL, Sandia, Timet) sites, remember to pH all containers received, except for VOA, TOX, and soils.

Notes:

Corrective Action:

- Client's Name: _____ Informed verbally on: _____ By: _____
- Client's Name: _____ Informed in writing on: _____ By: _____
- Sample(s) processed "as is". _____
- Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor (or designate) Review: Melissa Palmer Date: 9/18/02
Project Management Review: MWand Date: 9/18/02

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIALS AND THE DATE NEXT TO THAT ITEM

METALS

BECHTEL HANFORD, INC.

Client Sample ID: J004L8

TOTAL Metals

Lot-Sample #....: F2I180167-001
 Date Sampled....: 09/16/02
 % Moisture.....: 0.86

Date Received...: 09/17/02

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>WORK</u>
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>ORDER #</u>
Prep Batch #....: 2262140						
Chromium	9.8	1.0	mg/kg	SW846 6010B	09/19-09/23/02	E8EP11AH
		Dilution Factor: 1		MDL.....: 0.11		
Lead	2.6 J	0.30	mg/kg	SW846 6010B	09/19-09/23/02	E8EP11AE
		Dilution Factor: 1		MDL.....: 0.068		
Prep Batch #....: 2263147						
Mercury	0.0084 B	0.034	mg/kg	SW846 7471A	09/20/02	E8EP11AL
		Dilution Factor: 1		MDL.....: 0.0079		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #....: F2I180167
 Date Sampled....: 09/16/02

Date Received...: 09/17/02
 Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F2I180167-001 Prep Batch #....: 2262140									
Chromium									
	9.8	20.2	28.1	mg/kg	91		SW846 6010B	09/19-09/23/02	E8EP11AJ
	9.8	20.2	26.2	mg/kg	81	6.9	SW846 6010B	09/19-09/23/02	E8EP11AK
Dilution Factor: 1									
Lead									
	2.6	50.4	50.8	mg/kg	96		SW846 6010B	09/19-09/23/02	E8EP11AF
	2.6	50.4	50.3	mg/kg	95	1.1	SW846 6010B	09/19-09/23/02	E8EP11AG
Dilution Factor: 1									
MS Lot-Sample #: F2I180167-001 Prep Batch #....: 2263147									
Mercury									
	0.0084	0.168	0.198	mg/kg	113		SW846 7471A	09/20/02	E8EP11AM
	0.0084	0.168	0.195	mg/kg	111	1.7	SW846 7471A	09/20/02	E8EP11AN
Dilution Factor: 1									

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.
 Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #....: F2I180167

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MB Lot-Sample #: F2I190000-140 Prep Batch #....: 2262140						
Chromium	ND	1.0	mg/kg	SW846 6010B	09/19-09/23/02	E8GNPLAC
		Dilution Factor: 1				
Lead	0.15 B	0.30	mg/kg	SW846 6010B	09/19-09/23/02	E8GNPLAA
		Dilution Factor: 1				
MB Lot-Sample #: F2I200000-147 Prep Batch #....: 2263147						
Mercury	ND	0.033	mg/kg	SW846 7471A	09/20/02	E8JWJLAA
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F2I180167

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
LCS Lot-Sample#: F2I190000-140 Prep Batch #...: 2262140							
Lead	160	156	mg/kg	98	SW846 6010B	09/19-09/23/02	E8GNPLAD
			Dilution Factor: 1				
Chromium	133	130	mg/kg	98	SW846 6010B	09/19-09/23/02	E8GNPLAE
			Dilution Factor: 1				
LCS Lot-Sample#: F2I200000-147 Prep Batch #...: 2263147							
Mercury	24.0	23.4	mg/kg	98	SW846 7471A	09/20/02	E8JWJLAC
			Dilution Factor: 20				

NOTE(S):

 Calculations are performed before rounding to avoid round-off errors in calculated results.