0061290

SAF-B01-090

100-NR-1 TSD Sites R. A. Verification Sampling - Soil

FINAL DATA PACKAGE

E:Mail RESULTS TO:

Rick Kerkow ____N/A_____
INITIAL/DATE

Jon Fancher ____N/A_____
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow X5-57 MJP 1-26-04
INITIAL/DATE

Jon Fancher X0-17 MJP 1-26-04
INITIAL/DATE

Jeanette Duncan MJP 1-26-04
INITIAL/DATE

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

SDG __W04222 SAF-B01-090

Rad only Chem only X Rad & Chem

X Complete Partial

Waste Site: 116-N-1 Overburden - AA Verification

RECEIVED
FEB 05 2004
EDMC

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 57 Pages

Report No.: 24666

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W04222	B01-090	J015M3	J3L090313-1	F6A181AE	9F6A1810	3344464
		J015M3	J3L090313-1	F6A181AF	9F6A1810	3344466
		J015M3	J3L090313-1	F6A181AD	9F6A1810	3344470
		J015M3	J3L090313-1	F6A181AH	9F6A1810	3344472
		J015M3	J3L090313-1	F6A181AJ	9F6A1810	3344473
		J015M3	J3L090313-1	F6A181AC	9F6A1810	3344475
		J015M3	J3L090313-1	F6A181AA	9F6A1810	3344477

RECEIVED
JAN 2004

SEVERN TRENT STL

STL Richland
2800 George Washington Way
Richland, WA 99352

Tel: 509 375 3131 Fax: 509 375 5590
www.stl-inc.com

Certificate of Analysis

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

January 20, 2004

Attention: Joan Kessner

SAF Number	:	B01-090
Date SDG Closed	:	December 9, 2003
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W04222
Data Deliverable	:	21-Day / Summary

CASE NARRATIVE

I. Introduction

On December 9, 2003, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

BHI ID#	STLR ID#	MATRIX	DATE OF RECEIPT
J015M3	F6A18	SOIL	12/9/03

II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

III. 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-5010

Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017
Liquid Scintillation Counting
Tritium by method RICH-RC-5007
Nickel-63 by method RICH-RC-5069
Chemical Analyses
Chromium Hex by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed under SDG W04222 includes 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.

V. Comments

Alpha Spectroscopy
Americium-241 by method RICH-RC-5080:
The LCS, batch blank, sample and sample duplicate (J015M3) results are within contractual requirements.

Plutonium-238, - 239/240 by method RICH-RC-5010:
The LCS, batch blank, sample and sample duplicate (J015M3) results are within contractual requirements.

Gas Proportional Counting
Total Strontium by method RICH-RC-5006:
The LCS, batch blank, sample and sample duplicate (J015M3) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017:
Sample J015M3 aliquot was recounted on a different detector as the duplicate because insufficient volume was received for a separate aliquot to be analyzed. The U-238DHP recovery for the LCS is outside acceptance limits however it has a low abundance and the data is accepted. The identification of Eu-155 is rejected because the abundance criteria have not been met. Except as noted, the LCS, batch blank, sample and sample duplicate (J015M3) results are within contractual requirements.

Liquid Scintillation Counting
Tritium by method RICH-RC-5007
The LCS, batch blank, samples, and sample duplicate (J015M3) results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:
The LCS, batch blank, sample and sample duplicate (J015M3) results are within contractual requirements.

Chemical Analyses
Chromium Hex by EPA method 7196A:
The original sample matrix spike (J015M3) has a low recovery at 48% and the blank result is greater than the CRDL. Reanalysis confirms matrix effect with a matrix spike recovery at 55%. The reanalysis blank is within limits however the initial results are accepted as the reanalysis sample result is greater than the CRDL and its duplicate is less than the CRDL. Except as noted, the LCS, batch blank, samples, and sample duplicate (J015M3) results are within contractual requirements.

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:

for Beverly I. Giroir
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 = constants * f(x,y,z,...). 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/vn), 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) ***u_c - Combined Uncertainty.***	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, ***u_c the combined uncertainty.*** 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 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * 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 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * 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)/[sqrt($TPUs^2$ + $TPUd^2$)] 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

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Date: 21-Jan-04

Report No. : 24666

SDG No: W04222

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
3344464 PUISO_PLATE_AEA									
J015M3									
	F6A181AE	PU-238	0.00E+00 +- 9.4E-02	U	pCi/g	70%	1.04E-01	1.00E+00	
		PU239/40	0.00E+00 +- 9.4E-02	U	pCi/g	70%	1.04E-01	1.00E+00	
J015M3 DUP									
	F6A181AK	PU-238	0.00E+00 +- 1.0E-01	U	pCi/g	64%	1.14E-01	1.00E+00	
		PU239/40	0.00E+00 +- 1.0E-01	U	pCi/g	64%	1.14E-01	1.00E+00	
3344466 AMCMISO_EIE_PLT_AEA									
J015M3									
	F6A181AF	AM-241	6.63E-02 +- 1.3E-01	U	pCi/g	65%	1.80E-01	1.00E+00	
J015M3 DUP									
	F6A181AL	AM-241	5.16E-02 +- 1.0E-01	U	pCi/g	78%	1.40E-01	1.00E+00	
3344473 GAMMA_GS									
J015M3									
	F6A181AJ	CO-60	1.25E-01 +- 2.5E-02		pCi/g		1.70E-02	5.00E-02	
		CS-137	5.84E-01 +- 7.5E-02		pCi/g		1.71E-02	1.00E-01	
		EU-152	4.93E-04 +- 2.6E-02	U	pCi/g		4.31E-02	1.00E-01	
		EU-154	-1.86E-02 +- 3.3E-02	U	pCi/g		5.49E-02	1.00E-01	
		EU-155	5.02E-02 +- 2.8E-02	U	pCi/g		4.77E-02	1.00E-01	
J015M3 DUP									
	F6A181AP	CO-60	1.65E-01 +- 3.6E-02		pCi/g		2.54E-02	5.00E-02	
		CS-137	7.45E-01 +- 9.6E-02		pCi/g		2.43E-02	1.00E-01	
		EU-152	1.25E-03 +- 3.5E-02	U	pCi/g		5.95E-02	1.00E-01	
		EU-154	-1.01E-02 +- 4.8E-02	U	pCi/g		8.10E-02	1.00E-01	
		EU-155	6.20E-02 +- 3.7E-02	U	pCi/g		6.29E-02	1.00E-01	
3344475 SRTOT_SEP_PRECIP_GPC									
J015M3									
	F6A181AC	STRONTIUM	1.06E+00 +- 5.5E-01		pCi/g	80%	8.37E-01		
J015M3 DUP									
	F6A181AQ	STRONTIUM	2.62E-01 +- 4.0E-01	U	pCi/g	78%	8.76E-01		
3344470 NI63_LSC									
J015M3									
	F6A181AD	NI-63	7.65E-01 +- 5.5E+00	U	pCi/g	84%	6.43E+00	3.00E+01	
J015M3 DUP									
	F6A181AM	NI-63	3.58E+00 +- 5.6E+00	U	pCi/g	85%	6.33E+00	3.00E+01	
3344472 906.0_H3_LSC									
J015M3									
	F6A181AH	H-3	5.14E-02 +- 1.7E-02		pCi/g	100%	3.02E-02	4.00E+02	
J015M3 DUP									
	F6A181AN	H-3	5.95E-02 +- 1.7E-02		pCi/g	100%	3.04E-02	4.00E+02	

STL Richland

rptSTLRchSaSummary2 V4.05 A97

RPD - Relative Percent Difference.

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

Sample Results Summary

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Date: 21-Jan-04

Report No. : 24666

SDG No: W04222

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
3344477	7196_CR6								
	J015M3								
	F6A181AA	HEXCHROME	3.50E-01 +- 0.0E+00	U	mg/kg	N/A	3.50E-01	3.50E-01	
	J015M3 DUP								
	F6A181AT	HEXCHROME	3.50E-01 +- 0.0E+00	U	mg/kg	N/A	3.50E-01	3.50E-01	0.0

No. of Results: 24

RPD - Relative Percent Difference.

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

QC Results Summary
STL Richland STLRL

Date: 21-Jan-04

Ordered by Method, Batch No, QC Type,.

Report No. : 24666 **SDG No.:** W04222

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
PUISO_PLATE_AEA								
3344464 BLANK QC								
F6D9C1AA	PU-238	0.00E+00 +- 8.5E-02	U	pCi/g	37%			9.41E-02
	PU239/40	3.47E-02 +- 7.0E-02	U	pCi/g	37%			9.41E-02
3344464 LCS								
F6D9C1AC	PU239/40	6.67E+00 +- 1.7E+00		pCi/g	58%	97%	0.0	1.30E-01
AMCMISO_EIE_PLT_AEA								
3344466 BLANK QC								
F6D9E1AA	AM-241	0.00E+00 +- 6.4E-02	U	pCi/g	68%			7.04E-02
3344466 LCS								
F6D9E1AC	AM-241	8.99E+00 +- 2.1E+00		pCi/g	85%	99%	0.0	5.49E-02
GAMMA_GS								
3344473 BLANK QC								
F6EAL1AA	CO-60	1.00E-03 +- 6.2E-03	U	pCi/g				1.16E-02
	CS-137	1.05E-03 +- 6.4E-03	U	pCi/g				1.14E-02
	EU-152	1.34E-02 +- 1.6E-02	U	pCi/g				2.90E-02
	EU-154	5.21E-03 +- 1.8E-02	U	pCi/g				3.37E-02
	EU-155	-6.66E-03 +- 1.5E-02	U	pCi/g				2.46E-02
3344473 LCS								
F6EAL1AC	CS-137	2.85E-01 +- 5.2E-02		pCi/g		97%	0.0	3.12E-02
	K-40	1.96E+01 +- 2.5E+00		pCi/g		100%	0.0	2.41E-01
	RA-226	9.85E-01 +- 1.4E-01		pCi/g		85%	-0.1	4.67E-02
	RA-228	2.45E+00 +- 3.5E-01		pCi/g		131%	0.3	1.15E-01
	U-238DHP	2.28E+00 +- 9.6E-01		pCi/g		217%	1.2	9.50E-01
SRTOT_SEP_PRECIP_GPC								
3344475 BLANK QC								
F6EAN1AA	STRONTIUM	-7.02E-04 +- 5.6E-02	U	pCi/g	89%			1.33E-01
3344475 LCS								
F6EAN1AC	STRONTIUM	1.09E+00 +- 3.2E-01		pCi/g	90%	96%	0.0	1.28E-01
NI63_LSC								
3344470 BLANK QC								
F6EAD1AA	NI-63	-2.90E-01 +- 5.4E+00	U	pCi/g	85%			6.35E+00
3344470 LCS								
F6EAD1AC	NI-63	4.90E+02 +- 9.0E+01		pCi/g	81%	97%	0.0	6.66E+00
906.0_H3_LSC								
3344472 BLANK QC								
F6EAG1AA	H-3	8.12E-02 +- 1.3E-01	U	pCi/g	100%			2.87E-01
3344472 LCS								
F6EAG1AC	H-3	2.48E+00 +- 2.6E-01		pCi/g	100%	91%	-0.1	2.87E-01
7196_CR6								
3344477 MATRIX SPIKE								
F6A181AR	HEXCHROME	2.08E+01 +- 0.0E+00		mg/kg	N/A	47%	-0.5	3.50E-01
3344477 LCS								

QC Results Summary
STL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Date: 21-Jan-04

Report No. : 24666

SDG No.: W04222

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
F6EAR1AC	HEXCHROME	3.84E+01 +- 0.0E+00		mg/kg	N/A	96%	0.0	3.50E-01
3344477 BLANK QC								
F6EAR1AA	HEXCHROME	8.83E-01 +- 0.0E+00		mg/kg	N/A			3.50E-01

No. of Results: 24

FORM I

SAMPLE RESULTS

Date: 21-Jan-04

Lab Name:	**STL Richland**	**SDG:**	W04222	**Collection Date:**	12/1/2003 8:30:00 AM
Lot-Sample No.:	**J3L090313-1**	**Report No. :**	24666	**Received Date:**	12/9/2003 2:30:00 PM
Client Sample ID:	**J015M3**	**COC No. :**	B01-090-024	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3344464	PUISO_PLATE_AEA			**Work Order:** F6A181AE			**Report DB ID:** 9F6A1810					
PU-238	0.00E+00	U	0.0E+00	9.4E-02	1.04E-01	pCi/g	70%	*0.*	1/13/04 11:23 a		0.5009	ALP41
							1.00E+00	*0.*			G	
PU239/40	0.00E+00	U	0.0E+00	9.4E-02	1.04E-01	pCi/g	70%	*0.*	1/13/04 11:23 a		0.5009	ALP41
							1.00E+00	*0.*			G	
Batch: 3344466	AMCMISO_EIE_PLT_AEA			**Work Order:** F6A181AF			**Report DB ID:** 9F6A1810					
AM-241	6.63E-02	U	1.3E-01	1.3E-01	1.80E-01	pCi/g	65%	*0.37*	1/16/04 07:28 a		0.5009	ALP123
							1.00E+00	*0.99*			G	
Batch: 3344470	NI63_LSC			**Work Order:** F6A181AD			**Report DB ID:** 9F6A1810					
NI-63	7.65E-01	U	2.7E+00	5.5E+00	6.43E+00	pCi/g	84%	*0.12*	12/24/03 09:06 p		0.2511	LSC4
						3.13E+00	3.00E+01	*0.28*			G	
Batch: 3344472	906.0_H3_LSC			**Work Order:** F6A181AH			**Report DB ID:** 9F6A1810					
H-3	5.14E-02		1.5E-02	1.7E-02	3.02E-02	pCi/g	100%	*(1.7)*	12/15/03 09:25 p		100.1	LSC3
						1.39E-02	4.00E+02	*(6.2)*			G	
Batch: 3344473	GAMMA_GS			**Work Order:** F6A181AJ			**Report DB ID:** 9F6A1810					
CO-60	1.25E-01		2.5E-02	2.5E-02	1.70E-02	pCi/g		*(7.3)*	12/13/03 07:55 a		755.6	GER8$1
							5.00E-02	*(9.8)*			g	
CS-137	5.84E-01		7.5E-02	7.5E-02	1.71E-02	pCi/g		*(34.1)*	12/13/03 07:55 a		755.6	GER8$1
							1.00E-01	*(15.7)*			g	
EU-152	4.93E-04	U	2.6E-02	2.6E-02	4.31E-02	pCi/g		*0.01*	12/13/03 07:55 a		755.6	GER8$1
							1.00E-01	*0.04*			g	

STL Richland
rptSTLRchSample
V4.05 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 I

SAMPLE RESULTS

Date: 21-Jan-04

Lab Name:	**STL Richland**	**SDG:**	W04222	**Collection Date:**	12/1/2003 8:30:00 AM
Lot-Sample No.:	**J3L090313-1**	**Report No. :**	24666	**Received Date:**	12/9/2003 2:30:00 PM
Client Sample ID:	**J015M3**	**COC No. :**	B01-090-024	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
EU-154	-1.86E-02	U	3.3E-02	3.3E-02	5.49E-02	pCi/g		*-0.34*	12/13/03 07:55 a		755.6	GER8$1
							1.00E-01	*-(1.1)*			g	
EU-155	5.02E-02	U	2.8E-02	2.8E-02	4.77E-02	pCi/g		*(1.1)*	12/13/03 07:55 a		755.6	GER8$1
							1.00E-01	*(3.6)*			g	
Batch: 3344475	SRTOT_SEP_PRECIP_GPC			**Work Order:**	F6A181AC		**Report DB ID:**	9F6A1810				
STRONTIUM	1.06E+00		4.7E-01	5.5E-01	8.37E-01	pCi/g	80%	*(1.3)*	12/23/03 05:42 a		1.04	GPC27A
						3.89E-01		*(3.9)*			G	
Batch: 3344477	7196_CR6			**Work Order:**	F6A181AA		**Report DB ID:**	9F6A1810				
HEXCHROME	3.50E-01	U		0.0E+00	3.50E-01	mg/kg	N/A	*(1.)*	12/12/03		2.5	
							3.50E-01	*N/A*			G	

No. of Results: 12 **Comments:**

12

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: 21-Jan-04

DUPLICATE RESULTS

Lab Name:	**STL Richland**	**SDG:**	W04222	**Collection Date:**	12/1/2003 8:30:00 AM
Lot-Sample No.:	**J3L090313-1**	**Report No. :**	24666	**Received Date:**	12/9/2003 2:30:00 PM
Client Sample ID:	**J015M3 DUP**	**COC No. :**	B01-090-024	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3344464	PUISO_PLATE_AEA			**Work Order:** F6A181AK		**Report DB ID:** F6A181KR			**Orig Sa DB ID:** 9F6A1810			
PU-238	0.00E+00	U	0.0E+00	1.0E-01	1.14E-01	pCi/g	64%	0.	1/13/04 11:24 a		0.5005	ALP43
	0.00E+00	U	**RPD**			1.00E+00		0.			G	
PU239/40	0.00E+00	U	0.0E+00	1.0E-01	1.14E-01	pCi/g	64%	0.	1/13/04 11:24 a		0.5005	ALP43
	0.00E+00	U	**RPD**			1.00E+00		0.			G	
Batch: 3344466	AMCMISO_EIE_PLT_AEA			**Work Order:** F6A181AL		**Report DB ID:** F6A181LR			**Orig Sa DB ID:** 9F6A1810			
AM-241	5.16E-02	U	1.0E-01	1.0E-01	1.40E-01	pCi/g	78%	0.37	1/16/04 07:28 a		0.5005	ALP124
	6.63E-02	U	**RPD**	**24.8**		1.00E+00		0.99			G	
									Alpha Spec Result Sum = 5.2E-02			
Batch: 3344470	NI63_LSC			**Work Order:** F6A181AM		**Report DB ID:** F6A181MR			**Orig Sa DB ID:** 9F6A1810			
NI-63	3.58E+00	U	2.7E+00	5.6E+00	6.33E+00	pCi/g	85%	0.56	12/24/03 10:48 p		0.2503	LSC4
	7.65E-01	U	**RPD**	**129.5**		3.00E+01		(1.3)			G	
									Alpha Spec Result Sum = 5.2E-02			
Batch: 3344472	906.0_H3_LSC			**Work Order:** F6A181AN		**Report DB ID:** F6A181NR			**Orig Sa DB ID:** 9F6A1810			
H-3	5.95E-02		1.6E-02	1.7E-02	3.04E-02	pCi/g	100%	(2.)	12/15/03 10:07 p		100.1	LSC3
	5.14E-02		**RPD**	**14.6**		4.00E+02		(7.)			G	
									Alpha Spec Result Sum = 5.2E-02			
Batch: 3344473	GAMMA_GS			**Work Order:** F6A181AP		**Report DB ID:** F6A181PR			**Orig Sa DB ID:** 9F6A1810			
CO-60	1.65E-01		3.6E-02	3.6E-02	2.54E-02	pCi/g		(6.5)	12/13/03 09:37 p		755.6	GER6$1
	1.25E-01		**RPD**	**27.7**		5.00E-02		(9.1)			g	

STL Richland

rptSTLRchDupV4.05 A97

RPD - Relative Percent Difference.

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: 21-Jan-04

DUPLICATE RESULTS

Lab Name:	**STL Richland**	**SDG:**	W04222	**Collection Date:**	12/1/2003 8:30:00 AM
Lot-Sample No.:	**J3L090313-1**	**Report No. :**	24666	**Received Date:**	12/9/2003 2:30:00 PM
Client Sample ID:	**J015M3 DUP**	**COC No. :**	B01-090-024	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
CS-137	7.45E-01		9.6E-02	9.6E-02	2.43E-02	pCi/g		(30.6)	12/13/03 09:37 p		755.6	GER6$1
	5.84E-01		**RPD**	**24.2**		1.00E-01		(15.6)			g	
EU-152	1.25E-03	U	3.5E-02	3.5E-02	5.95E-02	pCi/g		0.02	12/13/03 09:37 p		755.6	GER6$1
	4.93E-04	U	**RPD**	**86.7**		1.00E-01		0.07			g	
EU-154	-1.01E-02	U	4.8E-02	4.8E-02	8.10E-02	pCi/g		-0.13	12/13/03 09:37 p		755.6	GER6$1
	-1.86E-02	U	**RPD**	**-59.2**		1.00E-01		-0.42			g	
EU-155	6.20E-02	U	3.7E-02	3.7E-02	6.29E-02	pCi/g		0.99	12/13/03 09:37 p		755.6	GER6$1
	5.02E-02	U	**RPD**	**21.1**		1.00E-01		(3.3)			g	
Batch: 3344475	SRTOT_SEP_PRECIP_GPC			**Work Order:** F6A181AQ		**Report DB ID:** F6A181QR			**Orig Sa DB ID:** 9F6A1810			
STRONTIUM	2.62E-01	U	4.0E-01	4.0E-01	8.76E-01	pCi/g	78%	0.3	12/23/03 05:42 a		1.0	GPC27B
	1.06E+00		**RPD**	**120.8**				(1.3)			G	
Batch: 3344477	7196_CR6			**Work Order:** F6A181AT		**Report DB ID:** F6A181TR			**Orig Sa DB ID:** 9F6A1810			
HEXCHROME	3.50E-01	U		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	12/12/03		2.5	
	3.50E-01	U	**RPD**	**0.0**		3.50E-01		N/A			G	

No. of Results: 12 **Comments:**

RPD - Relative Percent Difference.
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

BLANK RESULTS

Date: 21-Jan-04

Lab Name: STL Richland

Matrix: SOIL

SDG: W04222

Report No. : 24666

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3344477	7196_CR6			**Work Order:**	F6EAR1AA		**Report DB ID:**	F6EAR1AB				
HEXCHROME	8.83E-01			0.0E+00	3.50E-01	mg/kg	N/A	(2.5)	12/12/03		2.5	
						3.50E-01		N/A			G	
Batch: 3344464	PUISO_PLATE_AEA			**Work Order:**	F6D9C1AA		**Report DB ID:**	F6D9C1AB				
PU-238	0.00E+00	U	0.0E+00	8.5E-02	9.41E-02	pCi/g	37%	0.	1/13/04 11:24 a		1.0	ALP47
						1.00E+00		0.			G	
PU239/40	3.47E-02	U	6.9E-02	7.0E-02	9.41E-02	pCi/g	37%	0.37	1/13/04 11:24 a		1.0	ALP47
						1.00E+00		0.99			G	
Batch: 3344466	AMCMISO_EIE_PLT_AEA			**Work Order:**	F6D9E1AA		**Report DB ID:**	F6D9E1AB				
AM-241	0.00E+00	U	0.0E+00	6.4E-02	7.04E-02	pCi/g	68%	0.	1/16/04 07:28 a		1.0	ALP127
						1.00E+00		0.			G	
Batch: 3344470	NI63_LSC			**Work Order:**	F6EAD1AA		**Report DB ID:**	F6EAD1AB				
NI-63	-2.90E-01	U	2.6E+00	5.4E+00	6.35E+00	pCi/g	85%	-0.05	12/25/03 12:30 a		0.25	LSC4
					3.10E+00	3.00E+01		-0.11			G	
Batch: 3344472	906.0_H3_LSC			**Work Order:**	F6EAG1AA		**Report DB ID:**	F6EAG1AB				
H-3	8.12E-02	U	1.2E-01	1.3E-01	2.87E-01	pCi/g	100%	0.28	12/15/03 08:00 p		10.0	LSC3
					1.32E-01	4.00E+02		(1.2)			G	
Batch: 3344473	GAMMA_GS			**Work Order:**	F6EAL1AA		**Report DB ID:**	F6EAL1AB				
CO-60	1.00E-03	U	6.2E-03	6.2E-03	1.16E-02	pCi/g		0.09	12/13/03 08:00 a		859.27	GER5$1
						5.00E-02		0.32			g	
CS-137	1.05E-03	U	6.4E-03	6.4E-03	1.14E-02	pCi/g		0.09	12/13/03 08:00 a		859.27	GER5$1
						1.00E-01		0.33			g	

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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

BLANK RESULTS

Date: 21-Jan-04

Lab Name: STL Richland

SDG: W04222

Matrix: SOIL

Report No. : 24666

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
EU-152	1.34E-02	U	1.6E-02	1.6E-02	2.90E-02	pCi/g		0.46	12/13/03 08:00 a		859.27	GER5$1
						1.00E-01		(1.6)			g	
EU-154	5.21E-03	U	1.8E-02	1.8E-02	3.37E-02	pCi/g		0.15	12/13/03 08:00 a		859.27	GER5$1
						1.00E-01		0.59			g	
EU-155	-6.66E-03	U	1.5E-02	1.5E-02	2.46E-02	pCi/g		-0.27	12/13/03 08:00 a		859.27	GER5$1
						1.00E-01		-0.9			g	
Batch: 3344475	SRTOT_SEP_PRECIP_GPC			**Work Order:** F6EAN1AA			**Report DB ID:** F6EAN1AB					
STRONTIUM	-7.02E-04	U	5.6E-02	5.6E-02	1.33E-01	pCi/g	89%	-0.01	12/23/03 05:42 a		6.0	GPC27C
					6.17E-02			-0.03			G	

No. of Results: 12 **Comments:**

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

LCS RESULTS

Date: 21-Jan-04

Lab Name: STL Richland

SDG: W04222

Matrix: SOIL

Report No. : 24666

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3344477	7196_CR6			**Work Order:**	F6EAR1AC		**Report DB ID:**	F6EAR1AS					
HEXCHROME	3.84E+01			0.0E+00	3.50E-01	mg/kg	N/A	4.00E+01		96%	12/12/03	2.5	
							Rec Limits:	80	120	0.0		G	
Batch: 3344464	PUISO_PLATE_AEA			**Work Order:**	F6D9C1AC		**Report DB ID:**	F6D9C1CS					
PU239/40	6.67E+00		9.1E-01	1.7E+00	1.30E-01	pCi/g	58%	6.86E+00	3.5E-01	97%	1/13/04 11:20 a	1.0	ALP121
							Rec Limits:	70	130	0.0		G	
Batch: 3344466	AMCMISO_EIE_PLT_AEA			**Work Order:**	F6D9E1AC		**Report DB ID:**	F6D9E1CS					
AM-241	8.99E+00		8.5E-01	2.1E+00	5.49E-02	pCi/g	85%	9.12E+00	3.1E-01	99%	1/16/04 07:28 a	1.0	ALP128
							Rec Limits:	70	130	0.0		G	
Batch: 3344470	NI63_LSC			**Work Order:**	F6EAD1AC		**Report DB ID:**	F6EAD1CS					
NI-63	4.90E+02		8.7E+00	9.0E+01	6.66E+00	pCi/g	81%	5.05E+02	1.7E+01	97%	12/25/03 02:11 a	0.25	LSC4
							Rec Limits:	70	130	0.0		G	
Batch: 3344472	906.0_H3_LSC			**Work Order:**	F6EAG1AC		**Report DB ID:**	F6EAG1CS					
H-3	2.48E+00		2.3E-01	2.6E-01	2.87E-01	pCi/g	100%	2.73E+00	8.2E-02	91%	12/15/03 08:42 p	10.0	LSC3
							Rec Limits:	70	130	-0.1		G	
Batch: 3344473	GAMMA_GS			**Work Order:**	F6EAL1AC		**Report DB ID:**	F6EAL1CS					
CS-137	2.85E-01		5.2E-02	5.2E-02	3.12E-02	pCi/g		2.93E-01	1.3E-02	97%	12/13/03 09:39 p	457.79	GER7$1
							Rec Limits:	70	130	0.0		g	
K-40	1.96E+01		2.5E+00	2.5E+00	2.41E-01	pCi/g		1.95E+01	1.9E+00	100%	12/13/03 09:39 p	457.79	GER7$1
							Rec Limits:	70	130	0.0		g	
RA-226	9.85E-01		1.4E-01	1.4E-01	4.67E-02	pCi/g		1.15E+00	5.2E-02	85%	12/13/03 09:39 p	457.79	GER7$1
							Rec Limits:	70	130	-0.1		g	

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

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FORM II

LCS RESULTS

Date: 21-Jan-04

Lab Name: STL Richland

SDG: W04222

Matrix: SOIL

Report No. : 24666

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
RA-228	2.45E+00		3.5E-01	3.5E-01	1.15E-01	pCi/g		1.87E+00	9.6E-02	131%	12/13/03 09:39 p	457.79	GER7$1
							Rec Limits:	70	130	0.3		g	
U-238DHP	2.28E+00		9.6E-01	9.6E-01	9.50E-01	pCi/g		1.05E+00	5.4E-02	217%	12/13/03 09:39 p	457.79	GER7$1
							Rec Limits:	70	130	1.2		g	
Batch: 3344475	SRTOT_SEP_PRECIP_GPC			**Work Order:** F6EAN1AC			**Report DB ID:** F6EAN1CS						
STRONTIUM	1.09E+00		1.3E-01	3.2E-01	1.28E-01	pCi/g	90%	1.13E+00	1.4E-02	96%	12/23/03 05:42 a	6.0	GPC27D
							Rec Limits:	20	105	0.0		G	

No. of Results: 11 **Comments:**

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

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FORM II

Date: 21-Jan-04

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W04222

Lot-Sample No.: J3L090313-1 **Report No. :** 24666 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3344477	7196_CR6			**Work Order:** F6A181AR			**Report DB ID:** F6A181RW			**Orig Sa DB ID:** 9F6A1810			
HEXCHROME	2.08E+01			0.0E+00	3.50E-01	mg/kg	N/A	47.21%	4.40E+01		12/12/03	2.5	
	3.50E-01	RPD	193.4									G	

No. of Results: 1 **Comments:**

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RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3L090313
Client ID: BHI
Due Date: 12/30/03
QC Batch Number: 3344466
Method Test Parameter: SX - AMISO
Matrix: SOIL
SDG Number: 2104222

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: 1-16-04

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3344466

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: 1-17-04

LS-038B, Rev. 10, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3L090313
Client ID: BHI
Due Date: 12/30/2003
QC Batch Number: 3344464
Method Test Parameter: SO – PUISO
Matrix: SOIL
SDG Number: W04222

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: 1-14-04

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3344464

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: 1-14-04 ~~1-14-04~~ 1-14-04

LS-038B, Rev. 10, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3L090313
Client ID: BHI
Due Date: 12/30/03
QC Batch Number: 3344473
Method Test Parameter: TA-Gamma
Matrix: Soil
SDG Number: WO 4222

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? 10-01476	✓		
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: [signature] Date: 12-18-03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3344473

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: See NCM

Second Level Review: [signature] Date: 12-22-03

LS-038B, Rev. 10, 8/02

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-01476**
NCM Initiated By: Dale O'Connell
Date Opened: 12/18/2003
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Environmental - Prep
Tests: Gamma by GER
Lot #'s (Sample #'s): J3L090313 (1), J3L100000 (473),
QC Batches: 3344473

Nonconformance: Insufficient sample volume for QC
Subcategory: Other (explanation required)

Problem Description / Root Cause

Name	Date	Description
Dale O'Connell	12/18/2003	Insufficient sample to generate a duplicate. LCS result outside acceptance limits. U-238DHP accuracy at 217%. Cause: Counting Statistics. Client requested U-238DHP at lower abundance, therefore erratic recoveries and higher MDA. Possible False Positive: Although key-line activity> MDA, identification of radionuclide rejected by abundance criteria. J3L090313-001: Eu-155.

Corrective Action

Name	Date	Corrective Action
Dale O'Connell	12/18/2003	Precision determination achieved by recounting sample on a different detector. Report results.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

SEVERN TRENT STL

P

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3L090313
Client ID: BHI
Due Date: 12/30/2003
QC Batch Number: 3344475
Method Test Parameter: TH TOTAL STRONTIUM
Matrix: SOIL
SDG Number: W04222

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: 12-29-03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3344475

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: 12-30-03

SEVERN TRENT STL

P

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3L090313
Client ID: BHI
Due Date: 12/30/2003
QC Batch Number: 3344470
Method Test Parameter: SH N.63
Matrix: SOIL
SDG Number: W04222

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: 12.29.03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 334470

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: 12-29-03

LS-038B, Rev. 10, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3L090313
Client ID: BHI
Due Date: 12/30/03
QC Batch Number: 3380447 2
Method Test Parameter: Sr-113
Matrix: Soil
SDG Number: W04222

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: 12-19-03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review
12-22-03

QC Batch Number: 33044472

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: 12-22-03

SEVERN TRENT STL

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): WD4222 Batch#3344477
Lab Sample Numbers or SDG: FGA18 RICHWC0005-REV.6
Method/Test/Parameter: HEXAVALENT CHROMIUM (other solid)

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd 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?		✓	NW 12-11-03	✓
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 (✓)	2nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted? 10-01502	✓			✓
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:

MS was not within QC limits. - 12-12-03 NW

Analyst: N. Williams Date: 12-12-03

Second-Level Review: [illegible] Date: 12-15-03

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: 10-01502
NCM Initiated By: Dale O'Connell
Date Opened: 12/22/2003
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Classical Chemistry
Tests: 7196A
Lot #'s (Sample #'s): J3L090313 (1), J3L100000 (477), J3L150000 (600),
QC Batches: 3344477, 3349600

Nonconformance: QC data exceeded criteria
Subcategory: MS/MSD accuracy and/or precision out of control

Problem Description / Root Cause

Name	Date	Description
Dale O'Connell	12/22/2003	Soluble matrix spike out of limits, recovery low at 48%. Blank result > MDL.

Corrective Action

Name	Date	Corrective Action
Dale O'Connell	12/22/2003	Re-analysis confirms matrix effect, soluble matrix spike recovery out of limits, recovery low at 55%. Blank result within limits. Re-analysis sample result > MDL, duplicate result < MDL. Report initial run results.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-090-024	Page 1 of 1

Collector: R Kerkow	Company Contact: R Kerkow — Telephone No.: 509-372-2187	Project Coordinator: KESSNER, JH	Price Code: 8L — Data Turnaround: 21 Days — Air Quality ☐
Project Designation: 100-NR-1 TSD Sites R. A. Verification Sampling - Soil	Sampling Location: 116-N-1 Overburden - AA Verification	SAF No.: B01-090	
Ice Chest No.: WM 001	Field Logbook No.: EL-1524-3 — COA: R1301N2600	Method of Shipment: GOV. VEH.	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

None

SDG W04222 — Due 12-30

SAMPLE ANALYSIS J3L090313

Preservation	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	None	None				
Type of Container	aG	aG	G	G	P	P				
No. of Container(s)	1	1	1	1	1	1				
Volume	60mL	60mL	60mL	120mL	1000mL	20mL				
	ICP Metals - 6010A (TAL) (Chromium)	7196_CR6: Hexavalent Chromium (J)	Mercury - 7471 - (CV)	NO2/NO3 - 353.1	See item (1) in Special Instructions.	Activity Scan		TIE TO		
Sample No.	Matrix *	Sample Date	Sample Time									
J015M3 F16A18	SOIL	12-1-03	0830	X	X	X	X	X	X		J015K1		OB-01

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: RB KERKW / RB Kerk — Date/Time: 12-1-03 1715	Received By/Stored In: 3728 REF#1B — Date/Time: 12-1-03 1715		
Relinquished By/Removed From: REF 1B 3728 — Date/Time: 12-9-03 1000	Received By/Stored In: SJ GALE — Date/Time: 12-9-03 1000		
Relinquished By/Removed From: SJ GALE — Date/Time: 12-9-03 1430	Received By/Stored In: STL 24C — Date/Time: 12/9/03 1430		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

Lab COA: R1325N-2F00

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Isotopic Plutonium {Plutonium-239/240}; Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 12/9/03

Matrix *

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

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

BHI-EE-011 (03/01/2002)

STL

VMS Gamma Spectroscopy Report generated 4-DEC-2003 07:16:12

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF11400_DET1_750ML9001360_18		
Sample ID	: J015K1	Project Number	: I16-N-1
RFC Number	: RCF11400	SAF Number	: B01-090
Sample Quantity	: 1.21400E+03 GRAMS		
Sample Type	: Soil	Sample Geometry	:
Sample Date	: 1-DEC-2003 08:30:00.	Acquisition date	: 4-DEC-2003 06:45:53.
Decay time	: 2 22:15:53.68	% dead time	: 0.0%
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.32
Energy cal. time	: 12-SEP-2003 16:47:37	Effic. cal. time	: 28-OCT-2003 09:30:28
Detector name	: BEGE 3820	Counting geometry	: 750 ml >900<1360
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	1.219E+01	1.716E+00	2.768E-01	2.720E-02	44.047
CO-60	9.193E-02	3.076E-02	3.813E-02	3.533E-03	2.411
CS-137	4.224E-01	7.261E-02	3.453E-02	3.260E-03	12.233
RA-226	9.907E-01	7.170E-01	4.729E-01	4.657E-02	2.095
AC-228	4.090E-01	1.948E-01	2.731E-01	3.468E-02	1.497
TH-234	8.640E-01	4.124E-01	4.695E-01	1.967E-01	1.840

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AG-108m	-2.040E-02		2.860E-02	2.843E-02	3.188E-03	-0.718
EU-152	2.267E-02		4.129E-02	5.289E-02	7.306E-03	0.429
EU-154	-4.814E-03		2.929E-02	3.604E-02	4.394E-03	-0.134
EU-155	1.897E-01	+	7.184E-02	6.971E-02	8.653E-03	2.721
U-235	5.644E-02	+	4.091E-02	3.440E-02	3.633E-03	1.641
AM-241	2.607E-02		5.199E-02	6.506E-02	8.520E-03	0.401

Approved by: CLAUDE W. LANDES Approval Date: 12 / 8 / 03

SEVERN TRENT STL

Sample Check-in List

Date/Time Received: 12/9/03@14:30 ar

Client: BHI SDG #: W04222 NA [ ] SAF #: B01-090 NA [ ]

Work Order Number: J3L090313 Chain of Custody # 801-090-024

Shipping Container ID: WM-001 Air Bill # N/A

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: <4°C NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 3
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 [ ] pH>9 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [signature] Date: 12/9/03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on_____ by_____ Person contacted_____

[ ] No action necessary; process as is.

Project Manager_____ Date_____

LS-023, 9/03, Rev. 5

12/16/2003 8:25:41 PM

Sample Preparation/Analysis

Balance Id:1120373922 / #21

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

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

PRIORITY

Pipet #: _____

Report Due: 12/30/2003 W04222

Sep1 DT/Tm Tech:

Batch: 3344466 **SOIL** **pCi/g** **PM, Quote: BG2, 27038**

Sep2 DT/Tm Tech:

SEQ Batch, Test: 3344464, 6ISO 3344464, 6ISO

(s)

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
1 F6A18-1-AF J3L090313-1-SAMP		0.5009g,in	PATB3207 11/19/03 09/23/03,r		100			
12/01/2003 08:30	(0.5g)	AmtRec: 60G,LG,20ML	#Containers: 3			Scr Rst:	Alpha:	Beta:
2 F6A18-1-AL-X J3L090313-1-DUP		0.5005g,in	PATB3208 11/19/03 09/23/03,r					
12/01/2003 08:30	(0.5g)	AmtRec: 60G,LG,20ML	#Containers: 3			Scr Rst:	Alpha:	Beta:
3 F6D9E-1-AA-B J3L100000-466-BLK		1.0g,in	PATB3209 11/19/03 09/23/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
4 F6D9E-1-AC-C J3L100000-466-LCS		1.0g,in	PASI0041 12/10/03 12/03/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
5 F6D9E-1-AD-BX J3L100000-466-MBLK		1.01g,in	PATB3210 11/19/03 09/23/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
6 F6D9E-1-AE-CM J3L100000-466-MLCS		1.01g,in	PASI0042 12/10/03 12/03/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:

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12/10/2003 2:20:17 PM

Sample Preparation/Analysis

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

PRIORITY

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Report Due: 12/30/2003

Batch: 3344466 pCi/g

SEQ Batch, Test: None

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: Reduced aliquots targeted in parentheses. 12-16-03
Ottawa Sand used for Samples F6D9E BV + CM. 12-16-03
Samples were muffled 12-17-03

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

F6A181AF-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

F6D9E1AA-BLK:

Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

F6D9E1AC-LCS:

Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

F6D9E1AD-MBLK:

Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

F6D9E1AE-MLCS:

Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

F6A181AF-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9E1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9E1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9E1AD-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9E1AE-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/17/04 2:12:52 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/18/03, 1/18/04, Batch: '3344466', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344466						
AC		**CalcC**	**WAGNERJ**	12/19/03 6:04:28 PM		
SC			wagarr	IsBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			SCHERRT	InPrep	12/11/03 9:51:36 AM	RICH-RC-5013 REVISION 4
SC			SCHERRT	Prep1C	12/12/03 11:06:23 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/16/03 8:22:15 PM	RICH-RC-5019 REVISION 4
SC			WAGNERJ	Prep2C	12/19/03 6:04:28 PM	RICH-RC-5019 REVISION 4
SC			RiceL	InSep1	12/29/03 7:13:09 AM	RICH-RC-5080 REVISION 1
SC			RiceL	Sep1C	1/15/04 10:55:58 AM	RICH-RC-5080 REVISION 1
SC			McPHERONC	Sep2C	1/15/04 3:36:23 PM	RICH-RC-5003 REVISION 4
SC			HUGHESJ	InCnt1	1/15/04 5:06:56 PM	RICH-RD-0008 REVISION 2
SC			BlackCL	CalcC	1/16/04 10:47:53 AM	RICH-RD-0008 REVISION 2
AC			**RiceL**	12/29/03 7:13:09 AM		
AC			**RiceL**	1/15/04 10:55:58 AM		
AC			**McPHERONC**	1/15/04 3:36:23 PM		
AC			**HUGHESJ**	1/15/04 5:06:56 PM		
AC			**BlackCL**	1/16/04 10:47:53 AM		

AC: Accepting Entry; SC: Status Change

12/16/2003 8:27:14 PM

Sample Preparation/Analysis

Balance Id:1120373922 1421

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

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

PRIORITY

Pipet #:

Report Due: 12/30/2003 W04222

Sep1 DT/Tm Tech:

Batch: 3344464 SOIL pCi/g PM, Quote: BG2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: 3344466, 6ISX 3344466, 6ISX

Prep Tech: ,WAGNERJ

(s)

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
1 F6A18-1-AE J3L090313-1-SAMP		0.5009g,in	PATB3207 11/19/03 09/23/03,r		100			
12/01/2003 08:30	(0.5g)	AmtRec: 60G,LG,20ML	#Containers: 3			Scr Rst:	Alpha:	Beta:
2 F6A18-1-AK-X J3L090313-1-DUP		0.5005g,in	PATB3208 11/19/03 09/23/03,r					
12/01/2003 08:30	(0.5g)	AmtRec: 60G,LG,20ML	#Containers: 3			Scr Rst:	Alpha:	Beta:
3 F6D9C-1-AA-B J3L100000-464-BLK		1.0g,in	PATB3209 11/19/03 09/23/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
4 F6D9C-1-AC-C J3L100000-464-LCS		1.0g,in	PASI0041 12/10/03 12/03/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
5 F6D9C-1-AD-BX J3L100000-464-MBLK		1.01g,in	PATB3210 11/19/03 09/23/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
6 F6D9C-1-AE-CM J3L100000-464-MLCS		1.01g,in	PASI0042 12/10/03 12/03/03,r					
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:

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12/10/2003 2:20:16 PM

Sample Preparation/Analysis

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

PRIORITY

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Report Due: 12/30/2003

Batch: 3344464 pCi/g

SEQ Batch, Test: None

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: Reduced aliquots targeted in parenthesis. 12-16-03
Ottawa sand used for Samples F6D9C BX + CM - 12-16-03
Samples were muffled. 12-16-03

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

F6A181AE-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						

F6D9C1AA-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						

F6D9C1AC-LCS:

PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

F6D9C1AD-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						

F6D9C1AE-MLCS:

PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

F6A181AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9C1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9C1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9C1AD-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

F6D9C1AE-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/14/04 11:37:04 AM

ICOC Fraction Transfer/Status Report

ByDate: 12/15/03, 1/15/04, Batch: '3344464', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344464						
AC		CalcC	WAGNERJ	12/16/03 8:22:01 PM		
SC			wagarr	IsBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			SCHERRT	InPrep	12/11/03 9:51:27 AM	RICH-RC-5013 REVISION 4
SC			SCHERRT	Prep1C	12/12/03 11:06:32 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/16/03 8:22:01 PM	RICH-RC-5019 REVISION 4
SC			WAGNERJ	Prep2C	12/19/03 6:04:35 PM	RICH-RC-5019 REVISION 4
SC			RiceL	InSep1	12/29/03 7:13:18 AM	RICH-RC-5080 REVISION 1
SC			McPHERONC	Sep2C	1/13/04 9:58:07 AM	RICH-RC-5039 REVISION 3
SC			BlackCL	InCnt1	1/13/04 10:11:59 AM	RICH-RD-0008 REVISION 2
SC			BlackCL	CalcC	1/13/04 12:38:40 PM	RICH-RD-0008 REVISION 2
AC			WAGNERJ	12/19/03 6:04:35 PM		
AC			RiceL	12/29/03 7:13:18 AM		
AC			McPHERONC	1/13/04 9:58:07 AM		
AC			BlackCL	1/13/04 10:11:59 AM		
AC			BlackCL	1/13/04 12:38:40 PM		

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AC: Accepting Entry; SC: Status Change

12/12/2003 10:53:46 AM

Sample Preparation/Analysis

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

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

Balance Id:1120421763
Pipet #: NA

Report Due: 12/30/2003 W004222

Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: ,SCHERRT

Batch: 3344473 SOIL pCi/g PM, Quote: BG2, 27038 PRIORITY

SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit (g)	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 F6A18-1-AJ J3L090313-1-SAMP		755.6g,in				SMA	200	G8	1115	12/13/2003
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3					Scr Rst:	Alpha:	Beta:
2 F6A18-1-AP-X J3L090313-1-DUP		755.7g,in						F6	12/14 0059	
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3					Scr Rst:	Alpha:	Beta:
3 F6EAL-1-AA-B J3L100000-473-BLK		859.27G,in	CAL827					G5	1116	12/13/2003
12/01/2003 08:30		AmtRec:	#Containers: 1					Scr Rst:	Alpha:	Beta:
4 F6EAL-1-AC-C J3L100000-473-LCS		457.79G,in	CAL816 01/01/03 01/01/02,r					G7	12/14 0059	
1/1/02 ~~12/01/2003 08:30~~ JH 12/12/03		AmtRec:	#Containers: 1					Scr Rst:	Alpha:	Beta:

Comments: Recount DUP No enough sample recount on different ditector JH 12/12/03

fu 12.12.03

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

F6A181AJ-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:
Cs-137DA	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:

F6EAL1AA-BLK:

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

12/18/03 10:58:51 AM

ICOC Fraction Transfer/Status Report

ByDate: 11/18/03, 12/19/03, Batch: '3344473', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344473						
AC		**CalcC**	**SCHERRT**	12/11/03 9:51:55 AM		jwDone
SC			wagarr	IsBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			SCHERRT	InPrep	12/11/03 9:51:55 AM	RICH-RC-5013 REVISION 4
SC			SCHERRT	Prep1C	12/12/03 11:07:10 AM	RICH-RC-5013 REVISION 4
SC			HUGHESJ	InCnt1	12/12/03 12:27:34 PM	RICH-RD-0007 REVISION 3
SC			BlackCL	CalcC	12/14/03 8:23:05 AM	RICH-RD-0007 REVISION 4
AC			**SCHERRT**	12/12/03 11:07:10		JWdONE
AC			**HUGHESJ**	12/12/03 12:27:34 PM		
AC			**BlackCL**	12/14/03 8:23:05 AM		

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AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.708

12/16/2003 8:41:52 PM

Sample Preparation/Analysis

PRIORITY

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

CH Sr-Total PrpRC5013, SepRC5006
TH Total Strontium by GPC
5I CLIENT: HANFORD

Balance Id:1120373922, #02
Pipet #: NA

Report Due: 12/30/2003 W04222

Sep1 DT/Tm Tech: 12-22-03 3:18 pm MF

Batch: 3344475 SOIL pCi/g PM, Quote: BG2, 27038

Sep2 DT/Tm Tech: NA

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 (mg)	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 F6A18-1-AC J3L090313-1-SAMP		1.04g,in	SRTA10259 08/07/03 05/29/03,r			79.9	50	072	0607	12/23/03
12/01/2003 08:30	(1g)	AmtRec: 60G,LG,20ML	#Containers: 3				Scr Rst:	Alpha:		Beta:
2 F6A18-1-AQ-X J3L090313-1-DUP		1.0g,in	SRTA10260 08/07/03 05/29/03,r			78.1		073		
12/01/2003 08:30	(1g)	AmtRec: 60G,LG,20ML	#Containers: 3				Scr Rst:	Alpha:		Beta:
3 F6EAN-1-AA-B J3L100000-475-BLK		6.0g,in	SRTA10261 08/07/03 05/29/03,r			89.4		07C		
12/01/2003 08:30		AmtRec:	#Containers: 1				Scr Rst:	Alpha:		Beta:
4 F6EAN-1-AC-C J3L100000-475-LCS		6.0g,in	STSB0817 11/13/03 09/11/03,r			90.2		07D		
12/01/2003 08:30		AmtRec:	#Containers: 1				Scr Rst:	Alpha:		Beta:

Comments: Reduced aliquots targeted in parenthesis. 12-16-03

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

F6A181AC-SAMP Constituent List:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

F6EAN1AA-BLK:

Sr-90	RDL:1	pCi/g	LCL:	UCL:	RPD:

F6EAN1AC-LCS:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

F6A181AC-SAMP Calc Info:

12/29/03 10:59:57 AM

ICOC Fraction Transfer/Status Report

ByDate: 11/29/03, 12/30/03, Batch: '3344475', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344475						
AC		**CalcC**	**SCHERRT**	12/11/03 9:51:46 AM		jwDone
SC			wagarr	isBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			SCHERRT	InPrep	12/11/03 9:51:46 AM	RICH-RC-5013 REVISION 4
SC			SCHERRT	Prep1C	12/12/03 11:06:14 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/16/03 8:21:45 PM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	Prep2C	12/18/03 9:58:36 AM	RICH-RC-5013 REVISION 4
SC			FABREM	InSep1	12/18/03 10:02:25 AM	RICH-RC-5006 REVISION 5
SC			FABREM	Sep1C	12/22/03 5:26:23 PM	RICH-RC-5006 REVISION 5
SC			DAWKINSO	InCnt1	12/22/03 6:31:35 PM	RICH-RD-0003 REVISION 3
SC			BlackCL	CalcC	12/23/03 7:11:59 AM	RICH-RD-0003 REVISION 3
AC			**SCHERRT**	12/12/03 11:06:14		JWdONE
AC			**WAGNERJ**	12/16/03 8:21:45 PM		
AC			**WAGNERJ**	12/18/03 9:58:36 AM		
AC			**FABREM**	12/18/03 10:02:25		
AC			**FABREM**	12/22/03 5:26:23 PM		
AC			**DAWKINSO**	12/22/03 6:31:35 PM		
AC			**BlackCL**	12/23/03 7:11:59 AM		

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AC: Accepting Entry; SC: Status Change

12/16/2003 8:29:35 PM

Sample Preparation/Analysis

Balance Id:1120373922 / #21

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

AF Ni-63 PrpRC5013/5019, SepRC5069
S4 Nickel by ICP and Nickel-63 by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 12/30/2003 W04222

Sep1 DT/Tm Tech:

Batch: 3344470 SOIL pCi/g PM, Quote: BG2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

(5)

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 F6A18-1-AD J3L090313-1-SAMP			0.2511g,in	0.251g	NITA1766 10/09/03 12/02/02 r		100			
12/01/2003 08:30		AmtRec: 60G,LG,20ML		#Containers: 3				Scr Rst:	Alpha:	Beta:
2 F6A18-1-AM-X J3L090313-1-DUP			0.2503g,in	0.25g	NITA1767 10/09/03 12/02/02 r					
12/01/2003 08:30		AmtRec: 60G,LG,20ML		#Containers: 3				Scr Rst:	Alpha:	Beta:
3 F6EAD-1-AA-B J3L100000-470-BLK			0.25g,in	0.25g	NITA1768 10/09/03 12/02/02 r					
12/01/2003 08:30		AmtRec:		#Containers: 1				Scr Rst:	Alpha:	Beta:
4 F6EAD-1-AC-C J3L100000-470-LCS			0.25g,in	0.25g	NISA0559 03/25/03					
12/01/2003 08:30		AmtRec:		#Containers: 1				Scr Rst:	Alpha:	Beta:

Comments:

```
All Clients for Batch:
   127642, BECHTEL HANFORD, INC.                    Bechtel Hanford, Inc.        ,  BG2, 27038

F6A181AD-SAMP Constituent List:
  Ni-63       RDL:30        pCi/g     LCL:70      UCL:130     RPD:35
F6EAD1AA-BLK:
  Ni-63       RDL:30        pCi/g     LCL:        UCL:        RPD:
F6EAD1AC-LCS:
  Ni-63       RDL:30        pCi/g     LCL:70      UCL:130     RPD:35
F6A181AD-SAMP Calc Info:
```

12/29/03 12:50:42 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/29/03, 12/30/03, Batch: '3344470', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344470						
AC		CalcC	SCHERRT	12/11/03 9:51:18 AM		jwDone
SC			wagarr	IsBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			SCHERRT	InPrep	12/11/03 9:51:18 AM	RICH-RC-5013 REVISION 4
SC			SCHERRT	Prep1C	12/12/03 11:06:40 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/16/03 8:21:54 PM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	Prep2C	12/18/03 9:58:41 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InSep1	12/22/03 9:19:37 AM	RICH-RC-5069 REVISION 4
SC			WAGNERJ	Sep1C	12/23/03 2:33:54 PM	RICH-RC-5069 REVISION 4
SC			DAWKINSO	InCnt1	12/23/03 2:40:13 PM	RICH-RD-0001 REVISION 2
SC			HUGHESJ	CalcC	12/29/03 9:04:58 AM	RICH-RD-0001 REVISION 2
AC			SCHERRT	12/12/03 11:06:40		JWdONE
AC			WAGNERJ	12/16/03 8:21:54 PM		
AC			WAGNERJ	12/18/03 9:58:41 AM		
AC			WAGNERJ	12/22/03 9:19:37 AM		
AC			WAGNERJ	12/23/03 2:33:54 PM		
AC			DAWKINSO	12/23/03 2:40:13 PM		
AC			HUGHESJ	12/29/03 9:04:58 AM		

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AC: Accepting Entry; SC: Status Change

12/10/2003 2:20:17 PM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC. , AT H-3 Prp/SepRC5037
Bechtel Hanford, Inc. S6 Tritium by Liquid Scint

PRIORITY

Report Due: 12/30/2003 W04222 5I CLIENT: HANFORD

Batch: 3344472 **SOIL** **pCi/g** **PM, Quote: BG2, 27038**

SEQ Batch, Test: None

Balance Id: 028

Pipet #:

Sep1 DT/Tm Tech: 12-15 03 am

Sep2 DT/Tm Tech:

Prep Tech:

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
1 F6A18-1-AH J3L090313-1-SAMP								
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3			Scr Rst:	Alpha:	Beta:
2 F6A18-1-AN-X J3L090313-1-DUP								
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3			Scr Rst:	Alpha:	Beta:
3 F6EAG-1-AA-B J3L100000-472-BLK								
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
4 F6EAG-1-AC-C J3L100000-472-LCS								
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
5 F6EAG-1-AD-BN J3L100000-472-IBLK								
12/01/2003 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

F6A181AH-SAMP Constituent List:
H-3 RDL:400 pCi/g LCL:70 UCL:130 RPD:35

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

WO Cnt: 5
ICOC v4.708

12/10/2003 2:20:18 PM

Sample Preparation/Analysis

AT H-3 Prp/SepRC5037
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Report Due: 12/30/2003

Batch: 3344472 pCi/g

SEQ Batch, Test: None

Balance Id: 028
Pipet #:
Sep1 DT/Tm Tech: 12-15-03 am
Sep2 DT/Tm Tech:
Prep Tech:

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

```
F6EAG1AA-BLK:
  H-3          RDL:400        pCi/g     LCL:        UCL:        RPD:
F6EAG1AC-LCS:
  H-3          RDL:400        pCi/g     LCL:70      UCL:130     RPD:35
F6EAG1AD-IBLK:
  H-3          RDL:400        pCi/g     LCL:        UCL:        RPD:
F6A181AH-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
F6EAG1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
F6EAG1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
F6EAG1AD-IBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

12/19/03 4:33:43 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/19/03, 12/20/03, Batch: '3344472', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344472						
AC		**CalcC**	**SCHERRT**	12/11/03 8:48:26 AM		
SC			wagarr	IsBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			SCHERRT	InPrep	12/11/03 8:48:26 AM	RICH-RC-5013 REVISION 4
SC			SCHERRT	Prep1C	12/11/03 8:48:42 AM	RICH-RC-5013 REVISION 4
SC			McDowellD	InSep1	12/15/03 1:28:01 PM	RICH-RC-5037 REVISION 3
SC			McDowellD	Sep1C	12/15/03 1:28:17 PM	RICH-RC-5037 REVISION 3
SC			BlackCL	InCnt1	12/15/03 1:49:57 PM	RICH-RD-0001 REVISION 2
SC			HUGHESJ	CalcC	12/16/03 12:49:50 PM	RICH-RD-0001 REVISION 2
AC			**SCHERRT**	12/11/03 8:48:42 AM		jwDone
AC			**McDowellD**	12/15/03 1:28:01 PM		
AC			**McDowellD**	12/15/03 1:28:17 PM		
AC			**BlackCL**	12/15/03 1:49:57 PM		
AC			**HUGHESJ**	12/16/03 12:49:50 PM		

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AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions v4.708

12/10/2003 2:20:19 PM

Sample Preparation/Analysis

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

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

PRIORITY

Report Due: 12/30/2003 W01222

Batch: 3344477 **SOIL** **mg/kg** **PM, Quote: BG2, 27038**

SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
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
1 F6A18-1-AA J3L090313-1-SAMP										
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3				Scr Rst:		Alpha:	Beta:
2 F6A18-1-AR-S J3L090313-1-MS										
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3				Scr Rst:		Alpha:	Beta:
3 F6A18-1-AT-X J3L090313-1-DUP										
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3				Scr Rst:		Alpha:	Beta:
4 F6A18-1-AU-S J3L090313-1-MS										
12/01/2003 08:30		AmtRec: 60G,LG,20ML	#Containers: 3				Scr Rst:		Alpha:	Beta:
5 F6EAR-1-AA-B J3L100000-477-BLK										
12/01/2003 08:30		AmtRec:	#Containers: 1				Scr Rst:		Alpha:	Beta:
6 F6EAR-1-AC-C J3L100000-477-LCS										
12/01/2003 08:30		AmtRec:	#Containers: 1				Scr Rst:		Alpha:	Beta:

12/10/2003 2:20:19 PM

Sample Preparation/Analysis

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

PRIORITY

Balance Id:

Pipet #:

Report Due: 12/30/2003

Sep1 DT/Tm Tech:

Batch: 3344477 mg/kg

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

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

F6A181AA-SAMP Constituent List:
HEXCHROME RDL:0.35 mg/kg LCL:80 UCL:120 RPD:20
F6A181AR-MS Constituent List:
HEXCHROME RDL:0.35 mg/kg LCL:75 UCL:125 RPD:20
F6A181AU-MS:
HEXCHROME RDL:0.35 mg/kg LCL:75 UCL:125 RPD:20
F6EAR1AA-BLK:
HEXCHROME RDL:0.35 mg/kg LCL: UCL: RPD:
F6EAR1AC-LCS:
HEXCHROME RDL:0.35 mg/kg LCL:80 UCL:120 RPD:20

F6A181AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
F6A181AR-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
F6A181AU-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
F6EAR1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
F6EAR1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

12/22/03 3:21:04 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/22/03, 12/23/03, Batch: '3349600','3344477', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3344477						
AC		InCnt1	WiensN	12/11/03 9:08:39 AM		
SC			wagarr	isBatched	12/10/03 2:20:06 PM	ICOC_RADCALC v4.708
SC			WiensN	InCnt1	12/11/03 9:08:39 AM	RICHWC5005 REV. 6

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AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 1

ICOCFractions v4.708

SEVERN TRENT STL

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

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. 100NR1 TSD SITE

B01-090

Lot #: F3L100219
SDG #: W04222

Joan Kessner

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

SEVERN TRENT LABORATORIES, INC.

MARTI WARD
Project Manager

December 30, 2003

RECEIVED
JAN 2004

SEVERN TRENT STL

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

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

December 31, 2003

STL LOT NUMBER: **F3L100219**
SDG: **W04222**

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

Dear Joan Kessner,

This report contains the analytical results for the sample received under chain of custody by Severn Trent Laboratories (STL) on December 9, 2003. This sample is associated with your B01-090 SAF.

All applicable quality control procedures met method-specified acceptance criteria.

This report shall not be reproduced except in full, without the written approval of the laboratory. This report is incomplete without the Case Narrative. Results are reported "as received" (i.e. wet weight) unless otherwise noted.

If you have any questions, please feel free to call me at (314) 298-8566.

Sincerely,

Marti Ward
Project Manager

cc: Project File

SAMPLE SUMMARY

F3L100219

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
F6DEX	001	J015M3	12/01/03	08:30

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

F3L100219

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
Nitrate-Nitrite	MCAWW 353.1	
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.

CUR#7765

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-090-024	Page 1 of 1

Collector: R Kerkow	Company Contact: R Kerkow — Telephone No.: 509-372-2187	Project Coordinator: KESSNER, JH	Price Code: 8L — Data Turnaround: 21 Days
Project Designation: 100-NR-1 TSD Sites R. A. Verification Sampling - Soil	Sampling Location: 116-N-1 Overburden - AA Verification	SAF No.: B01-090	Air Quality ☐
Ice Chest No.: ERC 02 003	Field Logbook No.: EL-1524-3 — COA: R1301N2600	Method of Shipment: FED EX	
Shipped To: ST LOUIS — Severn Trent Incorporated, ~~Richland~~	Offsite Property No.: A040 081	Bill of Lading/Air Bill No.: SEE OSPL	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially Radioactive

Special Handling and/or Storage
None

W04222

SAMPLE ANALYSIS

			Preservation	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	None	None				
			Type of Container	aG	aG	G	G	P	P				
			No. of Container(s)	1	1	1	1	1	1				
			Volume	60mL	60mL	60mL	120mL	1000mL	20mL				
				ICP Metals - 6010A (TAL) (Chromium)	7196 CR6 Hexavalent Chromium (1)	Mercury - 7471 - (CV)	NO2/NO3 - 353.1	See item (1) in Special Instructions	Activity Scan				
Sample No.	Matrix *	Sample Date	Sample Time										
J015M3	SOIL	12-1-03	0830	X	X	X	X	X	X		J015K1		OB-01

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RB KERKOW / RB Kerkow	12-1-03 1715	3728 REF#1B	12-1-03 1715
REF 1B 3728	12-9-03 1000	SJGALEM	12-9-03 1500
SJGALEM	12-9-03 1000	FED EX	

SPECIAL INSTRUCTIONS
Lab COA: R1325N-2F00

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Isotopic Plutonium {Plutonium-239/240}; Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref# 1B on 12/9/03

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; Lc=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By: KMcCaw	Title: Sample Control	Date/Time: 12/10/03 0900
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

LOT # 1311060213 SDG # W04222 STL ST. LOUIS STL

STL ST. SEVERN TRENT STL

Lot No.: F3L100219
W04222

Condition Upon Receipt Form
St. Louis Laboratory

Client: Richland
Quote No: 43915
Shipper/No: FedEx see below

Date: 12/10/03 Time: 0900
Initiated by: [illegible]
COC/RFA Numbers: see below

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

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

Shipper #	COC #
7923 8623 0414	W04-012-161, 169, 193
7909 8623 0484	B01-090-024
7917 3054 7269	X04-009-1,2,3,4,5,6,7,8,9,10,11,12,13,14

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: [illegible] Date: 12/10/03

Project Management Review: [illegible] Date: 12-11-03

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

7765

SL-ADMIN-0004, Revised 6/5/03
\\Qstlmo05\QA\FORMS\ST-LOUIS\ADMIN\Admin004_rev6_05_03.doc

VMS Gamma Spectroscopy Report generated 4-DEC-2003 07:16:12

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF11400_DET1_750ML9001360_18		
Sample ID	: J015K1	Project Number	: I16-N-1
RFC Number	: RCF11400	SAF Number	: B01-090
Sample Quantity	: 1.21400E+03 GRAMS		
Sample Type	: Soil	Sample Geometry	:
Sample Date	: 1-DEC-2003 08:30:00.	Acquisition date	: 4-DEC-2003 06:45:53.
Decay time	: 2 22:15:53.68	% dead time	: 0.0%
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.32
Energy cal. time	: 12-SEP-2003 16:47:37	Effic. cal. time	: 28-OCT-2003 09:30:28
Detector name	: BEGE 3820	Counting geometry	: 750 ml >900<1360
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	1.219E+01	1.716E+00	2.768E-01	2.720E-02	44.047
CO-60	9.193E-02	3.076E-02	3.813E-02	3.533E-03	2.411
CS-137	4.224E-01	7.261E-02	3.453E-02	3.260E-03	12.233
RA-226	9.907E-01	7.170E-01	4.729E-01	4.657E-02	2.095
AC-228	4.090E-01	1.948E-01	2.731E-01	3.468E-02	1.497
TH-234	8.640E-01	4.124E-01	4.695E-01	1.967E-01	1.840

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AG-108m	-2.040E-02		2.860E-02	2.843E-02	3.188E-03	-0.718
EU-152	2.267E-02		4.129E-02	5.289E-02	7.306E-03	0.429
EU-154	-4.814E-03		2.929E-02	3.604E-02	4.394E-03	-0.134
EU-155	1.897E-01	+	7.184E-02	6.971E-02	8.653E-03	2.721
U-235	5.644E-02	+	4.091E-02	3.440E-02	3.633E-03	1.641
AM-241	2.607E-02		5.199E-02	6.506E-02	8.520E-03	0.401

Approved by: CLAUDE W. LANDES Approval Date: 12 / 8 / 03

METALS

BECHTEL HANFORD, INC.

Client Sample ID: J015M3

TOTAL Metals

Lot-Sample #...: F3L100219-001 **Matrix.....:** SOLID
Date Sampled...: 12/01/03 **Date Received..:** 12/09/03
% Moisture.....: 8.9

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 3345221						
Mercury	ND	0.037	mg/kg	SW846 7471A	12/11/03	F6DEX1AD
		Dilution Factor: 1		MDL.....: 0.018		
Prep Batch #...: 3350134						
Chromium	10.7	1.1	mg/kg	SW846 6010B	12/16-12/17/03	F6DEX1AF
		Dilution Factor: 1		MDL.....: 0.062		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F3L100219 **Matrix.....:** SOLID
Date Sampled...: 12/01/03 **Date Received..:** 12/09/03

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F3L100219-001 **Prep Batch #...:** 3345221									
								% Moisture.....: 8.9	
Mercury									
	ND	0.183	0.181	mg/kg	99		SW846 7471A	12/11/03	F6DEX1AG
	ND	0.183	0.185	mg/kg	101	2.2	SW846 7471A	12/11/03	F6DEX1AH
			Dilution Factor: 1						
MS Lot-Sample #: F3L100219-001 **Prep Batch #...:** 3350134									
								% Moisture.....: 8.9	
Chromium									
	10.7	22.0	30.9	mg/kg	92		SW846 6010B	12/16-12/17/03	F6DEX1AK
	10.7	22.0	30.7	mg/kg	91	0.44	SW846 6010B	12/16-12/17/03	F6DEX1AL
			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 #...: F3L100219 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F3L110000-221 **Prep Batch #...:** 3345221						
Mercury	ND	0.033	mg/kg	SW846 7471A	12/11/03	F6FHR1AA
		Dilution Factor: 1				
MB Lot-Sample #: F3L160000-134 **Prep Batch #...:** 3350134						
Chromium	ND	1.0	mg/kg	SW846 6010B	12/16-12/17/03	F6QEG1AA
		Dilution Factor: 1				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F3L100219 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F3L110000-221 **Prep Batch #...:** 3345221							
Mercury	37.7	34.5	mg/kg	92	SW846 7471A	12/11/03	F6FHR1AC
			Dilution Factor: 50				
LCS Lot-Sample#: F3L160000-134 **Prep Batch #...:** 3350134							
Chromium	167	172	mg/kg	103	SW846 6010B	12/16-12/17/03	F6QEG1AC
			Dilution Factor: 1				

NOTE(S):

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

WET CHEMISTRY

BECHTEL HANFORD, INC.

Client Sample ID: J015M3

General Chemistry

Lot-Sample #...: F3L100219-001 **Work Order #...:** F6DEX **Matrix.....:** SOLID
Date Sampled...: 12/01/03 **Date Received..:** 12/09/03
% Moisture.....: 8.9

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N	2.7	2.2	mg/kg	MCAWW 353.1	12/11/03	3345249
		Dilution Factor: 4		MDL.....: 0.16		
Percent Moisture	8.9	0.10	%	MCAWW 160.3 MOD	12/10-12/11/03	3344644
		Dilution Factor: 1		MDL.....:		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F3L100219 **Work Order #...:** F6DEX-SMP F6DEX-DUP **Matrix.....:** SOLID

Date Sampled...: 12/01/03 **Date Received..:** 12/09/03

% Moisture.....: 8.9

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N						SD Lot-Sample #:	F3L100219-001	
	2.7	2.7	mg/kg	0.0	(0-20)	MCAWW 353.1	12/11/03	3345249

Dilution Factor: 4

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.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F3L100219 **Matrix.....:** SOLID
Date Sampled...: 12/01/03 **Date Received..:** 12/09/03

Percnt Moisture: 16

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N			Work Order #...:		F6DEX1AJ		MS Lot-Sample #:	F3L100219-001
	2.7	5.49	7.85	mg/kg	93	MCAWW 353.1	12/11/03	3345249
			Dilution Factor: 10					

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

General Chemistry

Client Lot #...: F3L100219 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N		Work Order #: F6FL81AA		MB Lot-Sample #:	F3L110000-249	
	ND	0.50	mg/kg	MCAWW 353.1	12/11/03	3345249
		Dilution Factor: 1				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: F3L100219 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N		WO#:F6FL81AC-LCS/F6FL81AD-LCSD				LCS Lot-Sample#: F3L110000-249		
	4.00	3.66	mg/kg	92		MCAWW 353.1	12/11/03	3345249
	4.00	3.63	mg/kg	91	0.82	MCAWW 353.1	12/11/03	3345249

Dilution Factor: 1

NOTE(S):

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