Analytical Data Package Prepared For

Pacific Northwest National Lab

Radiochemical Analysis By

STL Richland STLRL

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Data Package Contains 22 *Pages*

Report Nbr: 35238

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W05162	S07-004	B1MRL7	J7D300156-1	JVX3M1AA	9JVX3M10	7120511
		B1MRM3	J7D300156-2	JVX321AA	9JVX3210	7120511
		B1MRM8	J7D300156-3	JVX371AA	9JVX3710	7120511

Rec 5/7/07

Comments:

RECORD COPY
PROJ. 52494
CAT. T3.1
WORKING COPY

SEVERN TRENT STL

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Richland, WA 99354

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Certificate of Analysis

Pacific Northwest National Laboratories
Sigma V Building
Richland, WA 99352

May 3, 2007

Attention: Dot Stewart

SAF Number	:	S07-004
Date SDG Closed	:	April 27, 2007
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W05162
Data Deliverable	:	15-Day / Summary

CASE NARRATIVE

I. Introduction

On April 27, 2007 three water samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Pacific Northwest National Laboratories (PGW) specific IDs:

PGW ID#	STLR ID#	DATE OF RECEIPT	MATRIX
B1MRM8	JVX37	4/27/07	WATER
B1MRM3	JVX32	4/27/07	WATER
B1MRL7	JVX3M	4/27/07	WATER

II. Sample Receipt

The samples were 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:

Liquid Scintillation Counting
Tritium by method RICH-RC-5007

IV. Quality Control

The analytical results for each analysis performed 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

Liquid Scintillation Counting
Tritium by method RICH-RC-5007:
The LCS, batch blank, samples and sample duplicate (B1MRL7) 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:

Sherryl A. Adam
for 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.

5/3/2007 8:16:08 AM

STL Richland Report

Lab Code: STLRL

FormNbr: R FormatType: FEAD Version: 05 Rpt Nbr: 35238 File Name: h:\Reportdb\edd\FeadIV\Rad\W05162.Edd, h:\Reportdb\edd\FeadIV\Rad\35238.Edd

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9JVX3210	B1MRM3		MW6-SBB-A1	S07-004	W05162					04/27/2007 11:26

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
7120511	H-3	10028-17-8	4.61E+03	pCi/L	2.5E+02	3.3E+02		3.08E+02	100.0	906.0_H3_LSC	5.00E-03	L	05/02/2007 07:27	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9JVX3710	B1MRM8		MW6-SBB-A1	S07-004	W05162					04/27/2007 10:22

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
7120511	H-3	10028-17-8	2.12E+04	pCi/L	4.8E+02	9.5E+02		3.09E+02	100.0	906.0_H3_LSC	5.00E-03	L	05/02/2007 08:49	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9JVX3M10	B1MRL7		MW6-SBB-A1	S07-004	W05162					04/27/2007 11:26

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
7120511	H-3	10028-17-8	4.40E+03	pCi/L	2.5E+02	3.2E+02		3.09E+02	100.0	906.0_H3_LSC	5.00E-03	L	05/02/2007 04:44	I

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

STL RICHLAND

Thursday, May 03, 2007

STL Richland QC Blank Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05162.Edd, h:\Reportdb\edd\FeadIV\Rad\35238.Edd

Lab Sample Id:	JV0P91AB	**Sdg/Rept Nbr:**	W05162	35238	**Collection Date:** 04/27/2007 11:26
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BLK		**Received Date:** 04/27/2007

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AD	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
7120511	H-3	-6.42E+01	pCi/L	1.4E+02	U	3.09E+02	100.0		906.0_H3_LSC	5.00E-03	05/01/2007				D
BLK	10028-17-8			1.2E+02						L	23:16				

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Thursday, May 03, 2007

STL Richland QC Blank Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05162.Edd, h:\Reportdb\edd\FeadIV\Rad\35238.Edd

Lab Sample Id:	JV0P91DX	**Sdg/Rept Nbr:**	W05162	35238	**Collection Date:** 04/27/2007 11:26
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BLK		**Received Date:** 04/27/2007

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AF	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
7120511	H-3	-1.60E+02	pCi/L	1.4E+02	U	3.15E+02	100.0		906.0_H3_LSC	5.00E-03	05/02/2007				D
BLK	10028-17-8			1.2E+02						L	02:00				

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Thursday, May 03, 2007

STL Richland QC Control Sample Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05162.Edd, h:\Reportdb\edd\FeadIV\Rad\35238.Edd

Lab Sample Id:	JV0P91CS	**Sdg/Rept Nbr:**	W05162	35238	**Collection Date:** 04/27/2007 11:26
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BS		**Received Date:** 04/27/2007

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AE	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
7120511	H-3	2.26E+03	pCi/L	2.4E+02		3.09E+02	100.0	2.71E+03	906.0_H3_LSC	5.00E-03	05/02/2007			75	D
BS	10028-17-8			2.0E+02				83.6		L	00:38			125	

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Thursday, May 03, 2007

STL Richland QC Control Sample Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05162.Edd, h:\Reportdb\edd\FeadIV\Rad\35238.Edd

Lab Sample Id:	JV0P91EM	**Sdg/Rept Nbr:**	W05162	35238	**Collection Date:** 04/27/2007 11:26
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BS		**Received Date:** 04/27/2007

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AG	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
7120511	H-3	2.36E+03	pCi/L	2.4E+02		3.14E+02	100.0	2.71E+03	906.0_H3_LSC	5.00E-03	05/02/2007			75	D
BS	10028-17-8			2.0E+02				87.2		L	03:22			125	

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Thursday, May 03, 2007

STL Richland QC Duplicate Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05162.Edd, h:\Reportdb\edd\FeadIV\Rad\35238.Edd

Lab Sample Id:	JVX3M1CR	**Sdg/Rept Nbr:**	W05162	35238	**Collection Date:** 04/27/2007 11:26
Client Id:	B1MRL7	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	DUP		**Received Date:** 04/27/2007

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
S07-004	MW6-SBB-A19981								AH	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
7120511	H-3	4.57E+03	pCi/L	3.3E+02		3.08E+02	100.0		906.0_H3_LSC	5.00E-03	05/02/2007	3.7	0.7		D
DUP	10028-17-8	4.40E+03		2.5E+02						L	06:05	20.0	3		

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

5/2/2007 2:06:35 PM

Lot No., Due Date: J7D300156; 05/11/2007

Client, Site: 384868; PGW 615HANFORD HANFORD

QC Batch No., Method Test: 7120511; RTRITIUM H-3 by LSC

SDG, Matrix: W05162; WATER

	Yes	No	N/A
8.0 Correction Calculation Protocol Used. OK	✓		
8.01 The Appropriate Methods Were Used To Analyze the Samples OK	✓		
8.02 Final Results Are in the Appropriate Activity Units OK	✓		
8.03 Batch Contains the Required QC Appropriate for the Method OK	✓		
8.04 The Correct Tracer and QC Vials Where Used in the Samples OK	✓		
8.05 Sample was Appropriately Traced Before or After Fractionating the Sample OK	✓		
8.06 At Least the Minimum Sample Volume Was Used Analysis Volume => JVX3M1AA 5.00<10.00 JVX321AA 5.00<10.00 JVX371AA 5.00<10.00 Q:VB ok AL 5/2/07		✓	
8.07 The Correct Count Geometry was Used. Count Geometry => JV0P91AF SVP15/5<>SVP10/10 JV0P91AG SVP15/5<>SVP10/10 JV0P91AA SVP15/5<>SVP10/10 JV0P91AC SVP15/5<>SVP10/10 JV0P91AD SVP15/5<>SVP10/10 JV0P91AE SVP15/5<>SVP10/10 JVX3M1AA SVP15/5<>SVP10/10 JVX3M1AC SVP15/5<>SVP10/10 JVX321AA SVP15/5<>SVP10/10 JVX371AA SVP15/5<>SVP10/10 Q:VC ok AL 5/2/07		✓	
8.08 The Sample was Counted for the Minimum Count Time or CRDL was Achieved. OK	✓		
8.09 Method Blank is within Control Limits. OK	✓		
8.1 Comments:			
8.11 Matrix Blank is within Control Limits. OK	✓		
8.12 Method Blank(s) < QAS Limit Value (No B Flag Necessary). OK	✓		
8.13 QAS Specified Duplicate Equation Value within Control Limits. OK (RPD)	✓		
8.14 LCS within Control Limits. OK	✓		
8.15 MLCS within Control Limits. OK	✓		
8.16 MS within Control Limits. No Matrix Spike Samples (MS) found in Batch!			✓
8.17 Tracer within Control Limits. No Tracers found in Batch!			✓
8.18 Samples are above Minimum Tracer Yield (No Failed Samples) No Tracers found in Batch!			✓
8.19 Sample Specific MDC <= CRDL. OK	✓		
8.2 Comments:			
8.21 Result < Lc, Activity Not Detected, U Flag. No Limit Specified!			✓
8.22 Result < Mdc, Activity Not Detected, U Flag. No Positive Results OK Calc_IDL Not Calculated	✓		

8.23 Result <= Action Level, when Defined. OK; No Action Level Found => H-3 OK; No Callin Level Found => H-3	Yes ✓	No	N/A
8.24 Result + 3s >=0, Not Too Negative. OK	Yes ✓	No	N/A
8.25 Counting Spectrum are within FWHM Limits. No FWHM found in Batch Data!	Yes	No	N/A ✓
8.26 Instruments have Current Calibrations.	Yes	No	N/A
8.27 Correct Count Library Used. No Count Library found in Batch Data!	Yes	No	N/A ✓
8.28 Instrument Background within Limits at Time of Counting. (Not Applicable to this version. To be developed in later versions)	Yes	No	N/A
8.29 Instrument Check Source within Limits at the Time of Counting. (Not Applicable to this version. To be developed in later versions)	Yes	No	N/A

8.3 Comments:

8.31 Results Blank Subtracted as Appropriate. OK	Yes ✓	No	N/A

First Level Review Angela Long **Date** 5/2/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 711L0511
W0514L

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: Kerry A. Williams Date: 5-2-07

SPH RICHLAND

PNNL JTD300154
WO 5162
Due 05-11-07

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S07-004-372

Page 1 of 1

Collector Fluor Hanford F. M. HALL	**Contact/Requester** Dot Stewart	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. S07-004	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title SURV, APRIL 2007	HHF-N-506-6	**Ice Chest No.** BRC **Temp.**
Shipped To (Lab) Severn Trent Incorporated, Richland	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol SURV	**Priority:** 15 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
All Labs except WSCF: Batch all PNNL samples submitted under A, G, I, S, and W 07 SAFs into one SDG, not to exceed SDG closure of 14 days.
WSCF: Batch all PNNL GW samples submitted into one SDG, daily closure.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1MRM8		W	4/27/7	1022	1x20-mL P	Activity Scan	None
B1MRM8		W	↓	↓	1x1000-mL P	906.0_H3_LSC: Tritium (1)	None
						JVX37	

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
Fluor Hanford F. M. HALL	APR 27 2007	1500	Erie Darby	APR 27 2007	1500
Relinquished By		Date/Time	Received By		Date/Time
Relinquished By		Date/Time	Received By		Date/Time
Relinquished By		Date/Time	Received By		Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DI = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

15

PNNL JTD300156
W05162
Due 05.11.07

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S07-004-371

Page 1 of 1

SUPPORTING DOCUMENT

Collector Fluor Hanford F. M. HALL	**Contact/Requester** Dot Stewart	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. S07-004	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title SURV, APRIL 2007	HNF-N-506-6	**Ice Chest No.** ERC **Temp.**
Shipped To (Lab) Severn Trent Incorporated, Richland	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol SURV	**Priority:** 15 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
All Labs except WSCF: Batch all PNNL samples submitted under A, G, I, S, and W 07 SAFs into one SDG, not to exceed SDG closure of 14 days.
WSCF: Batch all PNNL GW samples submitted into one SDG, daily closure.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1MRM3		W	4/27/7	1126	1x20-mL P	Activity Scan	None
B1MRM3		W	↓	↓	1x1000-mL P	906.0_H3_LSC: Tritium (1)	None
						JVX32	

Relinquished By Fluor Hanford F. M. HALL Print / Sign APR 27 2007 Date/Time 1500	Received By Print / Sign Eric Darby Eric Darby APR 27 2007 Date/Time 1500	Matrix *	
Relinquished By Date/Time	Received By Date/Time	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air	DS = Drum Solid, DL = Drum Liquid, T = Tissue, WI = Wine, L = Liquid, V = Vegetation, X = Other
Relinquished By Date/Time	Received By Date/Time		
Relinquished By Date/Time	Received By Date/Time		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

6

PNNL JTD 300156
WO 5162
Due 06/11/07

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # S07-004-370

Page 1 of 1

STL RICHLAND

Collector Fluor Hanford 5 F. M. HALL	**Contact/Requester** Dot Stewart	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. S07-004	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title SURV, APRIL 2007	HNF-N-506-6	**Ice Chest No.** ERC **Temp.**
Shipped To (Lab) Severn Trent Incorporated, Richland	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol SURV	**Priority:** 15 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
All Labs except WSCF: Batch all PNNL samples submitted under A, G, I, S, and W 07 SAFs into one SDG, not to exceed SDG closure of 14 days.
WSCF: Batch all PNNL GW samples submitted into one SDG, daily closure.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1MRL7		W	4/27/7	1126	1x20-mL P	Activity Scan	None
B1MRL7		W	↓	↓	1x1000-mL P	906.0_H3_LSC: Tritium (1)	None
						JVX3m	

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Fluor Hanford F. M. HALL		APR 2 7 2007	1500	Eric Danby		APR 2 7 2007	1500
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

STL

Sample Checkin List

Date/Time Received 4/27/87 1500

Client PGW SDG # W05162 # 507-004

[illegible] # JTD300156 [illegible] # 507-004-370, 371, 372

[illegible] ERC [illegible] N/A

[illegible] Yes ✓ No

2 Custody Seals dated and signed? N/A ( ) Yes (✓) No ( )

3 Chain of Custody record present? Yes ✓ No ( )

4 Cooler temperature [illegible] N/A ( ) Yes ✓ No ( )

[illegible] 3

[illegible] Yes ✓ No ( )

6 Samples have:
___ tape
___ custody seals
___ appropriate sample labels

7 Samples are:
___ in good condition
___ broken
___ [illegible]

[illegible] No ( ) N/A ( ) Yes ✓

9 Sample Locations, Sample Collection dates and times complete? Yes ✓ No ( )
*For documentation only. No corrective action necessary

10 Were any anomalies identified in sample receipt? Yes ( ) No ✓

11 Description of anomalies (include sample numbers): N/A

[illegible] Eric Darby 4/27/87 1500

[illegible] Sample #	[illegible]	[illegible]	[illegible]

Client informed on [illegible] by [illegible] Person contacted [illegible]

[illegible] ( ) No action necessary, process as is

Project Manager [illegible] Date [illegible]

[illegible]

STL RICHLAND

STL RICHLAND

4/30/2007 2:08:46 PM

Sample Preparation/Analysis

384868, Pacific Northwest National Laboratory ,
Pacific Northwest National Lab

AR H-3 Prp/SepRC5007
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Balance Id: 1x415
Pipet #:

AnalyDueDate: 05/11/2007 WO 5162

Sep1 DT/Tm Tech: 4-30 0?Bw

Batch: 7120511 WATER pCi/L
SEQ Batch, Test: None All Tests: 7120511 ARS6,

PM, Quote: SA , 57671

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JVX3M-1-AA J7D300156-1-SAMP 04/27/2007 11:26		AmtRec: 20ML,LP	#Containers: 2			Scr:	Alpha:	Beta:
2 JVX3M-1-AC-X J7D300156-1-DUP 04/27/2007 11:26		AmtRec: 20ML,LP	#Containers: 2			Scr:	Alpha:	Beta:
3 JVX32-1-AA J7D300156-2-SAMP 04/27/2007 11:26		AmtRec: 20ML,LP	#Containers: 2			Scr:	Alpha:	Beta:
4 JVX37-1-AA J7D300156-3-SAMP 04/27/2007 10:22		AmtRec: 20ML,LP	#Containers: 2			Scr:	Alpha:	Beta:
5 JV0P9-1-AA-B J7D300000-511-BLK 04/27/2007 11:26		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:
6 JV0P9-1-AC-C J7D300000-511-LCS 04/27/2007 11:26		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:
7 JV0P9-1-AD-BX J7D300000-511-MBLK 04/27/2007 11:26		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:

STL RICHLAND

4/30/2007 2:08:51 PM

Sample Preparation/Analysis

AR H-3 Prp/SepRC5007
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Balance Id: 12445
Pipet #:
Sep1 DT/Tm Tech: 4-30-07 Tam
Sep2 DT/Tm Tech:
Prep Tech:

AnalyDueDate: 05/11/2007

Batch: 7120511 pCi/L
SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 JV0P9-1-AE-CM J7D300000-511-MLCS 04/27/2007 11:26	AmtRec:	#Containers: 1				Scr:	Alpha:	Beta:
9 JV0P9-1-AF-BN J7D300000-511-IBLK 04/27/2007 11:26	AmtRec:	#Containers: 1				Scr:	Alpha:	Beta:
10 JV0P9-1-AG-BN J7D300000-511-IBLK 04/27/2007 11:26	AmtRec:	#Containers: 1				Scr:	Alpha:	Beta:

Comments:

All Clients for Batch:
384868, Pacific Northwest National Laboratory Pacific Northwest National Lab, SA , 57671

JVX3M1AA-SAMP Constituent List:

H-3	RDL:400	pCi/L	LCL:70	UCL:130	RPD:20
JV0P91AA-BLK:					
H-3	RDL:400	pCi/L	LCL:	UCL:	RPD:
JV0P91AC-LCS:					
H-3	RDL:400	pCi/L	LCL:70	UCL:130	RPD:20
JV0P91AD-MBLK:					
H-3	RDL:400	pCi/L	LCL:	UCL:	RPD:
JV0P91AE-MLCS:					
H-3	RDL:400	pCi/L	LCL:70	UCL:130	RPD:20
JV0P91AF-IBLK:					
H-3	RDL:400	pCi/L	LCL:	UCL:	RPD:
JV0P91AG-IBLK:					
H-3	RDL:400	pCi/L	LCL:	UCL:	RPD:

4/30/2007 2:08:55 PM

Sample Preparation/Analysis

AR H-3 Prp/SepRC5007
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Balance Id: 12445
Pipet #:
Sep1 DT/Tm Tech: 4-30 07 dm
Sep2 DT/Tm Tech:
Prep Tech:

AnalyDueDate: 05/11/2007

Batch: 7120511 pCi/L
SEQ Batch, Test: None

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

JVX3M1AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JV0P91AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JV0P91AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JV0P91AD-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JV0P91AE-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JV0P91AF-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JV0P91AG-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

5/2/2007 2:06:12 PM

ICOC Fraction Transfer/Status Report

ByDate: 5/2/2006, 5/7/2007, Batch: '7120511', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
7120511						
AC		CalcC	McDowellD	4/30/2007 2:49:20 PM		
SC			wagarr	IsBatched	4/30/2007 2:09:23 PM	ICOC_RADCALC v4.8.26
SC			McDowellD	InSep1	4/30/2007 2:49:20 PM	RICH-RC-5007 REVISION 6
SC			McDowellD	Sep1C	5/1/2007 1:30:42 PM	RICH-RC-5007 REVISION 6
SC			BlackCL	InCnt1	5/1/2007 1:39:19 PM	RICH-RD-0001 REVISION 3
SC			StringerR	CalcC	5/2/2007 10:59:41 AM	RICH-RD-0001 REVISION 3
AC			McDowellD	5/1/2007 1:30:42 PM		
AC			BlackCL	5/1/2007 1:39:19 PM		
AC			StringerR	5/2/2007 10:59:41		

AC: Accepting Entry, SC: Status Change