

SAF-RC-048
100 Area and 300 Area Component of the
RCBRA Water Sampling
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Jill Thomson H0-23

KW 7/24/06
INITIAL/DATE

Jeanette Duncan H9-02

KW 7/24/06
INITIAL/DATE

RECEIVED
AUG 07 2006

EDMC

COMMENTS:

SDG J00083

SAF-RC-048

Rad only Chem only Rad & Chem

Complete Partial

Waste Site: 199-K-22
199-F5-48
199-H4-48

Analytical Data Package Prepared For
Washington Closure Hanford



Radiochemical Analysis By
STL Richland

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

Assigned Laboratory Code: STLRL

Data Package Contains 26 Pages

Report No.: 32741

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
J00083	RC-048	J12682	J6F260214-1	H78WR1AA	9H78WR10	6178219
		J12687	J6F260214-2	H78WT1AA	9H78WT10	6178219
		J12691	J6F260214-3	H78WV1AA	9H78WV10	6178219
		J12695	J6F260214-4	H78WW1AA	9H78WW10	6178219

STL Richland
2800 George Washington Way
Richland, WA 99354

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Certificate of Analysis

Washington Closure Hanford
3190 George Washington Way
Richland, WA 99354

July 20, 2006

Attention: Joan Kessner

SAF Number : RC-048
Date SDG Closed : June 26, 2006
Number of Samples : Four (4)
Sample Type : Water
SDG Number : J00083
Data Deliverable : 45 - Day / Summary

CASE NARRATIVE

I. Introduction

On June 26, 2006, four water samples were received at STL Richland (STLR) for wet chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

<u>WCH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J12682	H78WR	WATER	6/26/06
J12687	H78WT	WATER	6/26/06
J12691	H78WV	WATER	6/26/06
J12695	H78WW	WATER	6/26/06

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:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

Washington Closure Hanford
July 20, 2006

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

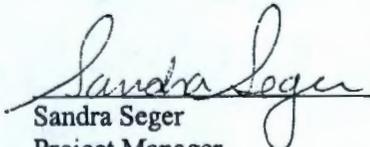
Chemical Analysis

Hexavalent Chromium by EPA method 7196A:

The LCS, batch blank, sample, sample matrix spike (J12695), matrix spike duplicate (J12695) and sample duplicate (J12695) 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:


Sandra Seger
Project Manager

Drinking Water Method Cross References

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

Uncertainty Estimation

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

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

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

Report Definitions

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

Sample Results Summary

Date: 20-Jul-06

STL Richland STLRL

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

Report No. : 32741

SDG No: J00083

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
6178219	7196_CR6								
	J12682								
	H78WR1AA	HEXCHROME	9.00E-02 +- 0.00E+00		mg/L	N/A	2.00E-03	2.00E-03	
	J12687								
	H78WT1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J12691								
	H78WV1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J12695								
	H78WW1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	H78WW1AE	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	0.0

No. of Results: 5

STL Richland

RPD - Relative Percent Difference.

rptSTLRchSaSummary2 V4.15.0 A97

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

QC Results Summary

Date: 20-Jul-06

STL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Report No. : 32741

SDG No.: J00083

Batch	Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
7196_CR8									
6178219 MATRIX SPIKE									
	H78WW1AC	HEXCHROME	2.73E-01 +- 0.00E+00		mg/L	N/A	104%	0.0	2.00E-03
	H78WW1AD	HEXCHROME	2.73E-01 +- 0.00E+00		mg/L	N/A	104%	0.0	2.00E-03
6178219 LCS									
	H79G01AC	HEXCHROME	5.17E-01 +- 0.00E+00		mg/L	N/A	103%	0.0	2.00E-03
6178219 BLANK QC									
	H79G01AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A			2.00E-03
No. of Results: 4									

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

rptSTLRchQcSummary V4.15.0 A97 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 20-Jul-06

SAMPLE RESULTS

Lab Name: STL Richland

SDG: J00083

Collection Date: 6/26/2006 9:29:00 AM

Lot-Sample No.: J6F260214-1

Report No.: 32741

Received Date: 6/29/2006 3:45:00 PM

Client Sample ID: J12682

COC No.: RC-048-382

Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6				Work Order: H78WR1AA		Report DB ID: 9H78WR10					
HEXCHROME	9.00E-02			0.0E+00	2.00E-03	mg/L	N/A	(45.)	6/26/06		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1

Comments:

FORM I

Date: 20-Jul-06

SAMPLE RESULTS

Lab Name: STL Richland

SDG: J00083

Collection Date: 6/26/2006 12:19:00 PM

Lot-Sample No.: J6F260214-2

Report No.: 32741

Received Date: 6/29/2006 3:45:00 PM

Client Sample ID: J12687

COC No.: RC-048-400

Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Batch: 6178219	7196_CR6			Work Order: H78WT1AA		Report DB ID: 9H78WT10					
HEXCHROME	2.00E-03 U		0.0E+00	2.00E-03	mg/L	N/A	1.	6/26/06		100.0	
						2.00E-03	N/A			ML	

No. of Results: 1

Comments:

FORM I

Date: 20-Jul-06

SAMPLE RESULTS

Lab Name: STL Richland

SDG: J00083

Collection Date: 6/26/2006 10:57:00 AM

Lot-Sample No.: J6F260214-3

Report No. : 32741

Received Date: 6/29/2006 3:45:00 PM

Client Sample ID: J12691

COC No. : RC-048-404

Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6			Work Order: H78WV1AA		Report DB ID: 9H78WV10						
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	6/26/06		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1

Comments:

STL Richland
rptSTLRchSample
V4.15.0 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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 20-Jul-06

SAMPLE RESULTS

Lab Name: STL Richland

SDG: J00083

Collection Date: 6/26/2006 10:57:00 AM

Lot-Sample No.: J6F260214-4

Report No.: 32741

Received Date: 6/29/2006 3:45:00 PM

Client Sample ID: J12695

COC No.: RC-048-408

Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6			Work Order: H78WW1AA			Report DB ID: 9H78WW10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	6/26/06		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1

Comments:

FORM II

Date: 20-Jul-06

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00083

Collection Date: 6/26/2006 10:57:00 AM

Lot-Sample No.: J6F260214-4

Report No.: 32741

Received Date: 6/29/2006 3:45:00 PM

Client Sample ID: J12695

COC No.: RC-048-408

Matrix: WATER

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6			Work Order: H78WW1AE		Report DB ID: H78WW1ER		Orig Sa DB ID: 9H78WW10				
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	6/26/06		100.0	
	2.00E-03	U	RPD	0.0		2.00E-03		N/A			ML	

No. of Results: 1 Comments:

STL Richland

RPD - Relative Percent Difference.

rptSTLRchDupV4.1
5.0 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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 20-Jul-06

Lab Name: STL Richland

SDG: J00083

Matrix: WATER

Report No. : 32741

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA ,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6				Work Order: H79G01AA			Report DB ID: H79G01AB				
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	6/26/06		100.0	
						2.00E-03		N/A			ML	
No. of Results: 1			Comments:									

STL Richland
rptSTLRchBlank
V4.15.0 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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II
LCS RESULTS

Date: 20-Jul-06

Lab Name: STL Richland

SDG: J00083

Matrix: WATER

Report No. : 32741

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6			Work Order: H79G01AC				Report DB ID: H79G01AS					
HEXCHROME	5.17E-01			0.0E+00	2.00E-03	mg/L	N/A	5.00E-01		103%	6/26/06	100.0	
							Rec Limits:	85	115	0.0		ML	
No. of Results:	1	Comments:											

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRchLcs
V4.15.0 #97

FORM II
MATRIX SPIKE RESULTS

Date: 20-Jul-06

Lab Name: STL Richland

SDG: J00083

Lot-Sample No.: J6F260214-4

Report No. : 32741

Matrix: WATER

Parameter	SpikeResult, Orig Rst	Count Qual Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6178219	Work Order: H78WW1AC	Report DB ID: H78WW1CW	Orig Sa DB ID: 9H78WW10									
HEXCHROME	2.73E-01	0.0E+00	2.00E-03	mg/L	N/A	103.80%	2.63E-01	6/26/06	100.0	7196_CR6	ML	
	2.00E-03											
Batch: 6178219	Work Order: H78WW1AD	Report DB ID: H78WW1DW	Orig Sa DB ID: H78WW1CW									
HEXCHROME	2.73E-01	0.0E+00	2.00E-03	mg/L	N/A	103.80%	2.63E-01	6/26/06	100.0	7196_CR6	ML	
	2.73E-01											

Number of Results: 2

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPU_s)+sq(TPU_d))}]$ as defined by ICPT BOA.
 rptSTLRchMs Bias - $(Result/Expected)-1$ as defined by ANSI N13.30.
 V4.15.0 A97

FORM II

Date: 20-Jul-06

MATRIX SPIKE DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00083

Lot-Sample No.: J6F260214-4

Report No.: 32741

Matrix: WATER

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 6178219	7196_CR6			Work Order: H78WW1AC		Report DB ID: H78WW1CW		Orig Sa DB ID: H78WW1DW					
HEXCHROME	2.73E-01			0.0E+00	2.00E-03	mg/L	N/A	103.80%	2.63E-01		6/26/06	100.0	
	2.73E-01	RPD	0.0									ML	
Batch: 6178219	7196_CR8			Work Order: H78WW1AD		Report DB ID: H78WW1DW		Orig Sa DB ID: H78WW1CW					
HEXCHROME	2.73E-01			0.0E+00	2.00E-03	mg/L	N/A	103.80%	2.63E-01		6/26/06	100.0	
	2.73E-01	RPD	0.0									ML	
No. of Results: 2	Comments:												

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPU_s)+sq(TPU_d))}]$ as defined by ICPT BOA.
 rptSTLRchMsDup2 Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V4.15.0 A97

Work Order Number(s): H79G0, H78WW, H78WR, H78WV,				
Lab Sample Numbers or SDG: J00083				
Method/Test/Parameter: Cr+6 in Water / RICH-WC-5003, Rev 7				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration	✓			
1. Performed at required frequency with required number of levels?	✓			
2. Correlation coefficient within QC limits?	✓			
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters \leq reporting limit?	✓			
B. Continuing Calibration	✓			
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			
2. CCB analyzed at required frequency and all results \leq reporting limit?	✓			
C. Sample Analysis			✓	
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?			✓	
2. Were all sample holding times met?	✓			
D. QC Samples	✓			
1. All results for the preparation blank below limits?	✓			
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			
4. Analytical spikes within QC limits where applicable?			✓	
5. ICP only: One serial dilution performed per SDG?			✓	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	

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

Comments on any "No" response:

Analyst: Thomas E. Wheeler

Date: 6/26/06

Second-Level Review: Godin

Date: 7/20/06

J6F260214 100083 due 7-18-06 8/10/06 SRS 6/28/06

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-048-382		Page 1 of 1				
Collector DURATEK R. T. SICKLE		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 7N Data Turnaround 45 Days				
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa		Sampling Location 199-K-22		SAF No. RC-048		Air Quality <input type="checkbox"/>						
Ice Chest No. SAWS 105		Field Logbook No. EL-1592		COA BESRAS6520		Method of Shipment GOV. VEHICLE						
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A								
POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIAL RADIOACTIVE Special Handling and/or Storage COOL 4C				Preservation		Cool 4C						
				Type of Container		G/P						
				No. of Container(s)		1						
				Volume		500mL						
SAMPLE ANALYSIS Chromium Hex - 7196												
Sample No.		Matrix *	Sample Date	Sample Time								
J12682		WATER	6-26-06	0629	X			H78WR				
CHAIN OF POSSESSION Relinquished By/Removed From: DURATEK Date/Time: 1545 Relinquished By/Removed From: R. T. SICKLE Date/Time: 6-26-06				Sign/Print Names Received By/Stored In: S. Welch Date/Time: 1545 Received By/Stored In: S. Welch Date/Time: 6-26-06				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid Sl=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetative X=Other
LABORATORY SECTION		Received By		Title		Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time				

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-048-400	Page 1 of 1	
Collector DURATEK R. T. SICKLE	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH		Price Code 7N	Data Turnaround 45 Days		
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location 199-F5-48	SAF No. RC-048	Air Quality <input type="checkbox"/>					
Ice Chest No. SAWP 105	Field Logbook No. EL-1592	COA BESRAS6520	Method of Shipment GOV. VEHICLE					
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A						
POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIAL RADIOACTIVE Special Handling and/or Storage COOL 4C	Preservation	Cool 4C						
	Type of Container	G/P						
	No. of Container(s)	1						
	Volume	500mL						
SAMPLE ANALYSIS		Chromium Hex - 7196						
Sample No.	Matrix *	Sample Date	Sample Time					
J12687	WATER	6-26-06	1219	X		H78WT		
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From DURATEK R. T. SICKLE	Date/Time 6-26-06	Received By/Stored In <i>J. Welch</i>	Date/Time 6-26-06					
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					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
LABORATORY SECTION	Received By	Title		Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time				

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-048-404	Page 1 of 1
Collector DURATEK R. T. SICKLE	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH		Price Code 7N	Data Turnaround 45 Days	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa		Sampling Location 199-H4-48	SAF No. RC-048		Air Quality <input type="checkbox"/>		
Ice Chest No. SACS 105	Field Logbook No. EL-1592	COA BESRAS6520	Method of Shipment GOV. VEHICLE				
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A				
POSSIBLE SAMPLE HAZARDS/REMARKS <i>POTENTIAL RADIOACTIVE</i>		Preservation Cool 4C					
Special Handling and/or Storage <i>COOL 4C</i>		Type of Container G/P					
		No. of Container(s) 1					
		Volume 500mL					
SAMPLE ANALYSIS		Chromium Hex - 7196					
Sample No.	Matrix *	Sample Date	Sample Time				
J12691	WATER	6-26-06	1057	X		H78WV	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From DURATEK R. T. SICKLE	Date/Time 6-26-06	Received By/Stored In <i>[Signature]</i>	Date/Time 6-26-06	Sign/Print Names <i>[Signature]</i> Welch Date/Time 1945 <i>[Signature]</i> Welch 6-26-06			S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
LABORATORY SECTION	Received By	Title				Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time	

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-048-408	Page 1 of 1
Collector DURATEK R. T. SICKLE	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH		Price Code 7N	Data Turnaround 45 Days	
Project Designation 100 Area and 300 Area Component of the RC/BRA Water Sa		Sampling Location 199-H4-48	SAF No. RC-048		Air Quality <input type="checkbox"/>		
Ice Chest No. SAMS 105	Field Logbook No. EL-1592	COA BESRAS6520	Method of Shipment GOV. VEHICLE				
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A				
POSSIBLE SAMPLE HAZARDS/REMARKS POTENTIAL RADIOACTIVE			Preservation Cool 4C				
Special Handling and/or Storage COOL 4C			Type of Container G/P				
			No. of Container(s) 1				
			Volume 500mL				
SAMPLE ANALYSIS			Chromium Hex - 7196				
Sample No.	Matrix *	Sample Date	Sample Time				
J12695	WATER	6-26-06	1057	X		H78WW	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From DURATEK R. T. SICKLE		Date/Time 6-26-06	Sign/Print Names S. Welch S. Welch		Date/Time 6-26-06		S=Soil SF=Surface SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum - Solid DL=Drum - Liquid TL=Tank WL=Wagon L=Log V=Vegetation X=Other
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
LABORATORY SECTION	Received By	Title			Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time		



STL

Sample Check-in List

Date/Time Received: 6.26.06 15:45

Client: BH1 SDG #: J00083 NA SAF #: RC-048 NA

Work Order Number: J6F-260214 Chain of Custody # RC-048-382400

Shipping Container ID: N/A SICS 6/27/06 Air Bill # N/A 404,408

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

Sample Custodian: S. Welch Date: 6.26.06 15:45

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

STL RICHLAND

6/27/2006 8:48:47 AM

Sample Preparation/Analysis

Balance Id:

127642, Washington Closure Hanford
Bechtel Hanford, Inc.

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 07/17/2006

Sep1 DT/Tm Tech:

Batch: 6178219 WATER mg/L
SEQ Batch, Test: None All Tests: 88EA, 6178219 88EA,

PM, Quote: HC , 27023

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample Date/Time	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 H78WR-1-AA J6F260214-1-SAMP [Barcode]								
06/26/2006 09:29		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:
2 H78WT-1-AA J6F260214-2-SAMP [Barcode]								
06/26/2006 12:19		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:
3 H78WV-1-AA J6F260214-3-SAMP [Barcode]								
06/26/2006 10:57		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:
4 H78WW-1-AA J6F260214-4-SAMP [Barcode]								
06/26/2006 10:57		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:
5 H78WW-1-AC-S J6F260214-4-MS [Barcode]								
06/26/2006 10:57		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:
6 H78WW-1-AD-D J6F260214-4-MSD [Barcode]								
06/26/2006 10:57		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:
7 H78WW-1-AE-X J6F260214-4-DUP [Barcode]								
06/26/2006 10:57		AmtRec: 500MLP	#Containers: 1			Scr:	Alpha:	Beta:

STL RICHLAND

6/27/2006 8:48:49 AM

Sample Preparation/Analysis

Balance Id:

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 07/17/2006

Sep1 DT/Tm Tech:

Batch: 6178219 mg/L
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample Date/Time	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:
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8 H79G0-1-AA-B

J6F270000-219-BLK

06/26/2006 10:57

AmtRec:

#Containers: 1

Scr:

Alpha:

Beta:

9 H79G0-1-AC-C

J6F270000-219-LCS

06/26/2006 10:57

AmtRec:

#Containers: 1

Scr:

Alpha:

Beta:

Comments:

All Clients for Batch:

127642, Washington Closure Hanford

Bechtel Hanford, Inc.

, HC , 27023

H78WR1AA-SAMP Constituent List:

HEXCHROME	RDL:0.002	mg/L	LCL:85	UCL:115	RPD:20	
H78WW1AC-MS:						
HEXCHROME	RDL:0.002	mg/L	LCL:85	UCL:115	RPD:20	
H78WW1AD-MSD:						
HEXCHROME	RDL:0.002	mg/L	LCL:85	UCL:115	RPD:20	
H79G01AA-BLK:						
HEXCHROME	RDL:0.002	mg/L	LCL:	UCL:	RPD:	
H79G01AC-LCS:						
HEXCHROME	RDL:0.002	mg/L	LCL:85	UCL:115	RPD:20	
H78WR1AA-SAMP Calc Info:						
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
H78WW1AC-MS:						
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
H78WW1AD-MSD:						
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
H79G01AA-BLK:						
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
H79G01AC-LCS:						
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	

STL RICHLAND

6/27/2006 8:48:49 AM

Sample Preparation/Analysis

Balance Id: _____

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 07/17/2006

Sep1 DT/Tm Tech: _____

Batch: 6178219
SEQ Batch, Test: None

mg/L

Sep2 DT/Tm Tech: _____

Prep Tech: _____



Work Order, Lot, Sample Date/Time	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:
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Approved By _____ Date: _____