SEVERN TRENT STL

0059625

March 26, 2003

Melissa Gerrard
Fluor Hanford
2430 Stevens Center, Room 169
Richland, WA 99352

Reference: Contract 615

Dear Ms. Gerrard:

Accompanying this letter are the Data Package(s) for the radiochemical analyses for the following Fluor Sample Delivery Groups:

SDG NUMBER	SAF NUMBER	LOT NUMBER
W03993	F02-013	J3B250230

If you have any questions regarding this data package or require any additional information please contact Barb Gillespie at 375-3131.

Receipt of this letter and the packages are acknowledged by:

Name	Date	Time
[illegible]	3/27/03	3:15PM

XC: File

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JUN 09 2003
EDMC

MAR 2003
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Severn Trent Laboratories, Inc.
STL Richland • 2800 George Washington Way, Richland, WA 99352
Tel 509 375 3131 Fax 509 375 5590 • *www.stl-inc.com*

A part of Severn Trent plc

Analytical Data Package Prepared For

Fluor Hanford Inc.

Radiochemical Analysis By

STL Richland

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

Assigned Laboratory Code: STLRL

Data Package Contains 23 Pages

Report No.: 22095

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03993	F02-013	B16JH2	J3B250230-1	FH6JO1AA	9FH6J010	3057178
		B16JH3	J3B250230-2	FH6KC1AA	9FH6KC10	3057178
		B16JH4	J3B250230-3	FH6KG1AA	9FH6KG10	3057178

MAR 2003
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SEVERN TRENT STL

CERTIFICATE OF ANALYSIS

Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

March 26, 2003

Attention: Steve Trent

SAF Number	:	F02-013
Date SDG Closed	:	February 25, 2003
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W03993
Data Deliverable	:	45-Day / Summary

I. Introduction

On February 25, 2003, three water samples were received at STL Richland (STLR) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Fluor Hanford, Inc. specific IDs:

STLR ID#	FLUOR ID#	MATRIX	DATE OF RECEIPT
FH6J0	B16JH2	WATER	2/25/03
FH6KC	B16JH3	WATER	2/25/03
FH6KG	B16JH4	WATER	2/25/03

II. Analytical Results/Methodology

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

The requested analyses were: **Chemical Analyses**
Chromium Hex by EPA method 7196A

III. Quality Control

The analytical results for each analysis performed under SDG W03993 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Chemical Analyses

Chromium Hex by EPA method 7196A:

At the request of the client, three of the samples must have duplicate analysis performed. The LCS, batch blank, duplicates (B16JH2), matrix spike (B16JH2), matrix spike duplicate (B16JH2), and sample 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:

Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

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

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = 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: 26-Mar-03

Report No. : 22095

SDG No: W03993

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
3057178	EPA7196								
B16JH2									
	FH6JO1AA	HEXCHROME	9.00E-02 +- 0.00E+00		mg/L	N/A	2.00E-03		
B16JH2 DUP									
	FH6JO1AE	HEXCHROME	9.00E-02 +- 0.00E+00		mg/L	N/A	2.00E-03		0.0
B16JH3									
	FH6KC1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03		
B16JH4									
	FH6KG1AA	HEXCHROME	7.19E-02 +- 0.00E+00		mg/L	N/A	2.00E-03		

No. of Results: 4

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

Ordered by Method, Batch No, QC Type,.

Date: 26-Mar-03

Report No. : 22095

SDG No.: W03993

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
EPA7196								
3057178 MATRIX SPIKE								
FH6JO1AC	HEXCHROME	6.45E-01 +- 0.00E+00		mg/L	N/A	104.72%	0.0	2.00E-03
3057178 MATRIX SPIKE								
FH6JO1AD	HEXCHROME	6.44E-01 +- 0.00E+00		mg/L	N/A	104.53%	0.0	2.00E-03
3057178 LCS								
FH7LC1AC	HEXCHROME	5.31E-01 +- 0.00E+00		mg/L	N/A	106.20%	0.1	2.00E-03
3057178 BLANK QC								
FH7LC1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A			2.00E-03

No. of Results: 4

STL Richland
rptSTLRchQcSummary V3.99 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
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: 26-Mar-03

Lab Name:	STL Richland	**SDG:**	W03993	**Collection Date:**	2/25/2003 9:37:00 AM
Lot-Sample No.:	J3B250230-1	**Report No. :**	22095	**Received Date:**	2/25/2003 11:55:00 AM
Client Sample ID:	B16JH2	**COC No. :**	F02-013-015	**Matrix:**	WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	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: 3057178	EPA7196			**Work Order:**	FH6JO1AA		**Report DB ID:**	9FH6J010				
HEXCHROME	9.00E-02			0.00E+00	2.00E-03	mg/L	N/A	*(45.)*	2/25/03		100.0	
								N/A			ML	

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

08

STL Richland
rptSTLRchSample
V3.99 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: 26-Mar-03

Lab Name:	STL Richland	**SDG:**	W03993	**Collection Date:**	2/25/2003 9:33:00 AM
Lot-Sample No.:	J3B250230-2	**Report No. :**	22095	**Received Date:**	2/25/2003 11:55:00 AM
Client Sample ID:	B16JH3	**COC No. :**	F02-013-015	**Matrix:**	WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	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: 3057178	EPA7196			**Work Order:** FH6KC1AA			**Report DB ID:** 9FH6KC10					
HEXCHROME	2.00E-03	U		0.00E+00	2.00E-03	mg/L	N/A	1.	2/25/03		100.0	
								N/A			ML	

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

60

STL Richland
rptSTLRchSample
V3.99 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: 26-Mar-03

Lab Name:	STL Richland	**SDG:**	W03993	**Collection Date:**	2/25/2003 10:02:00 AM
Lot-Sample No.:	J3B250230-3	**Report No. :**	22095	**Received Date:**	2/25/2003 11:55:00 AM
Client Sample ID:	B16JH4	**COC No. :**	F02-013-016	**Matrix:**	WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	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: 3057178	EPA7196			**Work Order:** FH6KG1AA			**Report DB ID:** 9FH6KG10					
HEXCHROME	7.19E-02			0.00E+00	2.00E-03	mg/L	N/A	*(35.9)*	2/25/03		100.0	
								N/A			ML	

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

10

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: 26-Mar-03

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W03993	**Collection Date:**	2/25/2003 9:37:00 AM
Lot-Sample No.:	J3B250230-1	**Report No. :**	22095	**Received Date:**	2/25/2003 11:55:00 AM
Client Sample ID:	B16JH2 DUP	**COC No. :**	F02-013-015	**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: 3057178	EPA7196			**Work Order:** FH6JO1AE		**Report DB ID:** FH6J01ER			**Orig Sa DB ID:** 9FH6J010			
HEXCHROME	9.00E-02			0.00E+00	2.00E-03	mg/L	N/A	(45.)	2/25/03		100.0	
	9.00E-02		**RPD**	**0.0**				N/A			ML	

No. of Results: 1 **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.

FORM II

BLANK RESULTS

Date: 26-Mar-03

Lab Name: STL Richland

Matrix: WATER

SDG: W03993

Report No. : 22095

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: 3057178	EPA7196			Work Order:	FH7LC1AA		Report DB ID:	FH7LC1AB				
HEXCHROME	2.00E-03	U		0.00E+00	2.00E-03	mg/L	N/A	1. N/A	2/25/03		100.0 ML	

No. of Results: 1 Comments:

STL Richland
rptSTLRchBlank
V3.99 A97

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

FORM II

LCS RESULTS

Date: 26-Mar-03

Lab Name: STL Richland

Matrix: WATER

SDG: W03993

Report No. : 22095

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC|MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3057178	EPA7196			**Work Order:**	FH7LC1AC		**Report DB ID:**	FH7LC1AS					
HEXCHROME	5.31E-01			0.00E+00	2.00E-03	mg/L	N/A	5.00E-01		106.20%	2/25/03	100.0	
							Rec Limits:	85	115	0.1		ML	

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

13

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

rptSTLRchLcs
V3.99 A97

FORM II

Date: 26-Mar-03

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03993

Lot-Sample No.: J3B250230-1 **Report No. :** 22095 **Matrix:** WATER

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MD	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3057178	EPA7196			Work Order: FH6JO1AC			Report DB ID: FH6J01CW			Orig Sa DB ID: 9FH6J010			
HEXCHROME	6.45E-01			0.00E+00	2.00E-03	mg/L	N/A	104.72%	6.16E-01		2/25/03	100.0	
	9.00E-02	RPD	151.0									ML	
Batch: 3057178	EPA7196			Work Order: FH6JO1AD			Report DB ID: FH6J01DW			Orig Sa DB ID: 9FH6J010			
HEXCHROME	6.44E-01			0.00E+00	2.00E-03	mg/L	N/A	104.53%	6.16E-01		2/25/03	100.0	
	9.00E-02	RPD	150.9									ML	

No. of Results: 2 **Comments:**

14

STL Richland
rptSTLRchMs
V3.99 A97

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

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s):	WO 3993 BATCH: 3057178
Lab Sample Numbers or SDG:	FH6JO, FH6KC, FH6KG, FH7LC
Method/Test/Parameter:	CR+6 (WATER) RICHWC 5003 REV. 6

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?	✓			✓
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?			✓	✓
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: J. Dobecki Date: 3/5/03

Second-Level Review: [signature] Date: 3-10-03

[signature] 2/13/02

CHAIN OF CUSTODY

W-24154

FH - Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F02-013-015	Page 1 of 1
Collector Baechler/Johansen	Company Contact Bob Raidl	Telephone No. 373-3904	Project Coordinator TRENT, SJ	Price Code 7N Air Quality ☐
Project Designation 100-KR-4 Treatment System - Quarterly Sampling	Sampling Location 100-KR-4		SAF No. F02-013	Data Turnaround 45 Days
Ice Chest No. ERC-01-011	Field Logbook No. HNF-N-296	COA 117559ES10	Method of Shipment Government Vehicle	
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	P	P									
No. of Container(s)	1	1									
Volume	500mL	20mL									
SAMPLE ANALYSIS	7196_CR6: Hexavalent Chromium (1)	Activity Scan									

SDG W03993 03B250230

Sample No.	Matrix *	Sample Date	Sample Time									
B16JH2 FH6JO	WATER	2-25-03	0937	X	X							
B16JH3 FH6KC	WATER	2-25-03	0933	X	X							

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From M.H. Baechler M.G. Baechler	Date/Time 1155 2/25/03	Received By/Stored In [illegible] A. Rhineheart	Date/Time 11:55 2/25/03		S=Soil SE=Sediment SO=Solid SI=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time		
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

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

FH - Central Plateau Project	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F02-013-016	Page 1 of 1

Collector Baechler/Johansen	Company Contact Bob Raidl	Telephone No. 373-3904	Project Coordinator TRENT, SJ
Project Designation 100-KR-4 Treatment System - Quarterly Sampling	Sampling Location 100-KR-4		SAF No. F02-013
Ice Chest No. ERC-01-011	Field Logbook No. HNF-N-296	COA 117559ES10	Method of Shipment Government Vehicle
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A

Price Code 7N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	P	P									
No. of Container(s)	1	1									
Volume	500mL	20mL									
SAMPLE ANALYSIS	7196_CR6: Hexavalent Chromium (1)	Activity Scan									
Sample No. / Matrix * / Sample Date / Sample Time											
B16JH4 FH6KG / WATER / 2-25-03 / 1002	X	X									

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
M.A. Baechler M.A. Baechler	2/25/03 11:55	A. Rhinehart	2/25/03 11:55
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

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
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)

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 2/25/03@11:55aR

Client: FHI SDG #: W03993 NA [ ] SAF #: F02-013 NA [ ]

Work Order Number: J3B250230 Chain of Custody # F02-013-015,-016

Shipping Container ID: ERC-01-011 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: 6°C NA [X] 5.Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 6
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   - ___ tape
   - X custody seals
   - X hazard labels
   - X appropriate samples labels
9. Samples are:
   - X in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *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: Phil Rhodes / Richard Date: 2/25/03

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, 9/01, Rev. 4

2/26/2003 7:46:12 AM

Sample Preparation/Analysis

108302, FLUOR HANFORD IC , Waste
Management Federal Servi

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
01 STANDARD TEST SET

Report Due: 04/11/2003 W03993

Batch: 3057178 WATER ug/L PM, Quote: BG1, 29754

SEQ Batch, Test: None All Tests: 88EA, 3057178 88EA,

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	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FH6J0-1-AA J3B250230-1-SAMP 02/25/2003 09:37		AmtRec: 500P,20ML	#Containers: 2		Scr Rst:	Alpha:		Beta:
2 FH6J0-1-AC-S J3B250230-1-MS 02/25/2003 09:37		AmtRec: 500P,20ML	#Containers: 2		Scr Rst:	Alpha:		Beta:
3 FH6J0-1-AD-D J3B250230-1-MSD 02/25/2003 09:37		AmtRec: 500P,20ML	#Containers: 2		Scr Rst:	Alpha:		Beta:
4 FH6J0-1-AE-X J3B250230-1-DUP 02/25/2003 09:37		AmtRec: 500P,20ML	#Containers: 2		Scr Rst:	Alpha:		Beta:
5 FH6KC-1-AA J3B250230-2-SAMP 02/25/2003 09:33		AmtRec: 500P,20ML	#Containers: 2		Scr Rst:	Alpha:		Beta:
6 FH6KG-1-AA J3B250230-3-SAMP 02/25/2003 10:02		AmtRec: 500P,20ML	#Containers: 2		Scr Rst:	Alpha:		Beta:

C1

2/26/2003 7:46:13 AM

Sample Preparation/Analysis

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
01 STANDARD TEST SET

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

Report Due: 04/11/2003

Batch: 3057178 ug/L

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
7 FH7LC-1-AA-B J3B260000-178-BLK 02/25/2003 09:37		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
8 FH7LC-1-AC-C J3B260000-178-LCS 02/25/2003 09:37		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	

Comments:

All Clients for Batch:
108302, FLUOR HANFORD IC Waste Management Federal Servi, BG1, 29754

FH6J01AA-SAMP Constituent List:
HEXCHROME RDL: ug/L LCL:85 UCL:115 RPD:20
FH6J01AC-MS Constituent List:
HEXCHROME RDL:10 ug/L LCL:85 UCL:115 RPD:20
FH6J01AD-MSD:
HEXCHROME RDL:10 ug/L LCL:85 UCL:115 RPD:20
FH7LC1AA-BLK:
HEXCHROME RDL: ug/L LCL: UCL: RPD:
FH7LC1AC-LCS:
HEXCHROME RDL:10 ug/L LCL:85 UCL:115 RPD:20

FH6J01AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FH6J01AC-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FH6J01AD-MSD:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FH7LC1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FH7LC1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

3/10/03 3:05:48 PM

ICOC Fraction Transfer/Status Report

ByDate: 2/8/03, 3/11/03, Batch: '3057178', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3057178						
AC		Sep1C	DobeckIT	3/6/03 4:01:15 PM		
SC			DobeckIT	InSep1	3/6/03 4:01:15 PM	RICH-WC-5003 REV6
SC			DobeckIT	Sep1C	3/6/03 4:03:21 PM	RICH-WC-5003 REV6
AC			DobeckIT	3/6/03 4:03:21 PM		

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AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 2

ICOCFractions