W03042-Q85

Quanterra

Quanterra
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Richland, Washington 99352-1613

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0053048

CERTIFICATE OF ANALYSIS

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

RECEIVED
APR 25 2000
EDMC

March 22, 2000

Attention: Joan Kessner

MAR 2000
RECEIVED
Date
Log In

SAF Number	:	C00-011
Date SDG Closed	:	February 14, 2000
Number of Samples	:	Two (2)
Sample Type	:	Water
SDG Number	:	W03042
Data Deliverable	:	45 Day / Summary

I. Introduction

On January 31, 2000, two 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 Bechtel Hanford, Inc. (BHI) specific IDs:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D82TG10	B0X675	WATER	1/31/00
9D2QD10	B0X669	WATER	1/31/00

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 analysis was: **Chemical Analyses**
Chromium Hex by EPA method 7196

III. Quality Control

The analytical results for each analysis performed under SDG W03042 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.

Quality control sample results are reported in mg/L.

IV. Comments

Chemical Analyses
Chromium Hex by EPA method 7196:
The LCS, batch blank, sample, sample duplicate (B0X669) and sample matrix spike/matrix spike duplicate (B0X669) 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:

Jackie Waddell
Project Manager

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W03042 / 10125
LAB SAMPLE ID:	9D82QD10	**MATRIX:**	WATER
CLIENT ID:	B0X669	**DATE RECEIVED:**	1/31/2000 2:10:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	1.00E-02		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result <

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rptChemRadSample; v3.41

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W03042 / 10125
LAB SAMPLE ID:	9D82TG10	**MATRIX:**	WATER
CLIENT ID:	B0X675	**DATE RECEIVED:**	1/31/2000 3:00:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	4.61E-01		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result <

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rptChemRadSample; v3.41

Quanterra

DUPLICATE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W03042 / 10125
LAB SAMPLE ID:	D82QD14R	**MATRIX:**	WATER
CLIENT ID:	B0X669	**DATE RECEIVED:**	1/31/2000 2:10:00 P
ORIG LAB SAMPLE ID:	9D82QD10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	1.00E-02		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196	1.00E-02	0.00%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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rptChemRadDup; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W03042 / 10125
LAB SAMPLE ID:	D835J11B	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	0.00E+00	U	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W03042 / 10125
LAB SAMPLE ID:	D835J12S	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	5.02E-01		N/A	N/A	2.00E-03	mg/L	N/A	5.02E-01	100.00%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W03042	/ 10125
LAB SAMPLE ID:	D82QD12W	**MATRIX:**	WATER	

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.28E-01		N/A	N/A	2.00E-03	mg/L	1.00E-02	5.26E-01	100.38%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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rptChemRadMatrixSpike; v3.41

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W03042	/ 10125
LAB SAMPLE ID:	D82QD13W	**MATRIX:**	WATER	

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.27E-01		N/A	N/A	5.26E-02	mg/L	1.00E-02	5.26E+00	10.02%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc

rptChemRadMatrixSpike; v3.41

Quanterra

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): D82QD, D82TG Batch 0032146 Lot JOA310183

Lab Sample Numbers or SDG: W03042

Method/Test/Parameter: CRH6 in water RICH-WC-500 3 R.4

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency wih 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: Rorie Ross Date: 2/8/00

Second-Level Review: Jackie Waddell Date: 3/22/00

Form No. CG-191, Rev. 2, 1/97

CHAIN OF CUSTODY

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C00-011-13

Page 1 of 1

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C00-011	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-KR4-IAM (1 & 2) GW SAMPLING JANUARY 2000	Logbook No.: WM - SML - H30	Ice Chest No.: SML-123 Temp.
Shipped To (Lab): Quanterra Incorporated	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

W03042 JO9310183

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
FAX copies of QES log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0X669 (F)		W	1-31-00	1153	1x500-mL G/P	7196_CR6: Hexavalent Chromium (1)	Cool 4C
B0X669 (F)		W	1-31-00	1153	1x20-mL P	Activity Scan	None

D82QP

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			1-31-00 1410	Karen Schlinger			1-31-00 1410
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

0014

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # C00-011-2
		Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C00-011	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-KR4-IAM (1 & 2) GW SAMPLING, JANUARY 2000	Logbook No.: WMJ JML H19 PG 67	Ice Chest No.: PEACE Temp.
Shipped To (Lab): Quanterra Incorporated	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **
W03042 JUA310183

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
FAX copies of QES log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0X675 (F)		W	013100	1247	1x500-mL G/P	7196_CR6: Hexavalent Chromium (1)	Cool 4C
B0X675 (F)		W	013100		1x20-mL P	Activity Scan	None

D827G

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON		DR Brewington	1/31/00 1500	K. Ashbaugh			1-31-00 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

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 1-31-00 1500 SG#: W03042

Work Order Number: J09310183 SAF #: C00-011 S00-001-62 S00-001-58 S00-001-104

Shipping Container ID: PEACE Chain of Custody # C00-011-2, S00-001-90 S00-001-72

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 17 [illegible]
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 22
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ____ hazard labels
   - ____ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: [signature] Date: 1-31-00

Telephoned To: _____ On _____ By _____

0016

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 1-31-00 1410 SG#: _____

Work Order Number: _____ SAF #: S00-001 - C00-011

Shipping Container ID: SML123 Chain of Custody # S00-001-100, C00-011-13, S00-001-76

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature _____ NA
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ____ hazard labels
   - ____ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: L. Stanley Date: 1-31-00

Telephoned To: _____ On _____ By _____

0017

Client Sample Screening Results

28-Mar-00

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0NLR7D82JW		1/31/2000 1:23:00 PM	QUAD23C	1/31/2000 1:58:47 PM	B0NLR7D82JW	30	18	0.506666667	271	8.14833333
D82JW	LIQUID		Bkg:	1/29/2000 1:46:44 AM	BKG	600	56	0.093333333	531	0.885

Anl Date: 1/31/00	Tot Sa, Alq: 5.00E-01	, 1.00E+01	Alp;	(Dpm/ 1.26E+00	(uCi/ 2.83E-05	(pCi/ 5.67E+01	+ 2.3E+01	CAT	4.4E-01	Lab
Ppt mg: 1.1	Units: L	, ml	Bet;	Alq): 1.55E+01	Sa): 3.49E-04	L|g): 6.98E+02	+ 4.8E+01	I	7.2E-02	Alq L|g

BHI B0NLR8D82JX		1/31/2000 1:23:00 PM	QUAD23D	1/31/2000 1:58:47 PM	B0NLR8D82JX	30	40	1.266666667	903	29.2616667
D82JX	LIQUID		Bkg:	1/29/2000 1:46:44 AM	BKG	600	40	0.066666667	503	0.83833333

Anl Date: 1/31/00	Tot Sa, Alq: 5.00E-01	, 1.00E+01	Alp;	(Dpm/ 3.06E+00	(uCi/ 6.88E-05	(pCi/ 1.38E+02	± 2.8E+01	CAT	1.8E-01	Lab
Ppt mg: 1	Units: L	, ml	Bet;	Alq): 5.50E+01	Sa): 1.24E-03	L|g): 2.48E+03	± 8.5E+01	I	2.0E-02	Alq L|g

BHI B0W871D82K8		1/31/2000 1:23:00 PM	QUAD23B	1/31/2000 1:58:47 PM	B0W871D82K8	30	11	0.275	134	3.44
D82K8	SOIL		Bkg:	1/29/2000 1:46:44 AM	BKG	600	55	0.091666667	616	1.02666667

Anl Date: 1/31/00	Tot Sa, Alq: 6.41E+01	, 1.07E+02	Alp;	(Dpm/ 1.74E+00	(uCi/ 4.69E-04	(pCi/ 7.32E+00	± 5.0E+00	CAT	6.8E+00	Lab
Ppt mg: 107.2	Units: g	, mg	Bet;	Alq): 7.43E+00	Sa): 2.00E-03	L|g): 3.12E+01	± 3.6E+00	I	3.2E+00	Alq L|g

BHI B0WWN6D8442		2/2/2000 10:52:00 AM	QUAD24C	2/2/2000 12:16:35 PM	B0WWN6D8442	30	7	0.135	93	2.10333333
D8442	SOLID		Bkg:	2/2/2000 2:01:57 AM	BKG	600	59	0.098333333	598	0.99666667

Anl Date: 2/2/00	Tot Sa, Alq: 7.05E+01	, 1.24E+02	Alp;	(Dpm/ 8.83E-01	(uCi/ 2.27E-04	(pCi/ 3.22E+00	± 4.4E+00	CAT	1.6E+01	Lab
Ppt mg: 123.6	Units: g	, mg	Bet;	Alq): 4.62E+00	Sa): 1.19E-03	L|g): 1.68E+01	± 2.7E+00	I	5.9E+00	Alq L|g

BHI B0X669D82QD		1/31/2000 2:19:00 PM	QUAD21A	1/31/2000 3:45:30 PM	B0X669D82QD	30	37	1.083333333	113	2.77666667
D82QD	LIQUID		Bkg:	1/29/2000 1:46:30 AM	BKG	600	90	0.15	594	0.99

Anl Date: 1/31/00	Tot Sa, Alq: 5.00E-01	, 1.00E+01	Alp;	(Dpm/ 3.08E+00	(uCi/ 6.93E-05	(pCi/ 1.39E+02	± 3.0E+01	CAT	1.8E-01	Lab
Ppt mg: 0.1	Units: L	, ml	Bet;	Alq): 4.97E+00	Sa): 1.12E-04	L|g): 2.24E+02	± 3.1E+01	I	2.2E-01	Alq L|g

BHI B0X675D82TG		2/1/2000 9:09:00 AM	QUAD21A	2/1/2000 11:48:07 AM	B0X675D82TG	30	24	0.681666667	125	3.13833333
D82TG	LIQUID		Bkg:	2/1/2000 2:29:59 AM	BKG	600	71	0.118333333	617	1.02833333

Anl Date: 2/1/00	Tot Sa, Alq: 5.00E-01	, 1.00E+01	Alp;	(Dpm/ 1.91E+00	(uCi/ 4.31E-05	(pCi/ 8.61E+01	± 2.7E+01	CAT	2.9E-01	Lab
Ppt mg: 0.8	Units: L	, ml	Bet;	Alq): 5.91E+00	Sa): 1.33E-04	L|g): 2.66E+02	± 3.3E+01	I	1.9E-01	Alq L|g

00174

RQC050

Quanterra Incorporated
WET CHEM BATCHSHEET
Richland

Run Date: 2/01/00
Time: 9:45:14

PRODUCTION FIGURES - WET CHEM

TOTAL NUMBER	SAMPLE NUMBER	QC	RE-RUN MATRIX	RE-RUN OTHER	MISC NUMBER	TOTAL HOURS	EXPANDED DELIVERABLE

METHOD: EA Hexavalent Chromium 6A)
QC BATCH #: 0032148
PREP DATE: 2/01/00
USER: ROSSR

INITIALS:
PREP
ANAL

DATA ENTRY:
INITIALS
DATE

Work Order	Lab Number	Structured Analysis	Exp. Del.	Analysis Date	Sample ID:
D82QD-1-01	J-0A310183-001	XX I 88 EA 5I			B0X669
D82QD-1-03	J-0A310183-001-D	XX I 88 EA 5I			B0X669
D82QD-1-02	J-0A310183-001-S	XX I 88 EA 5I			B0X669
D82QD-1-04	J-0A310183-001-X	XX I 88 EA 5I			B0X669 DUP
D82TG-1-01	J-0A310183-002	XX I 88 EA 5I			B0X675
D835J-1-01	J-0B010000-148-B	XX I 88 EA 5I			INTRA-LAB BLANK
D835J-1-02	J-0B010000-148-C	XX I 88 EA 5I			INTRA-LAB CHECK

Control Limits

(85-115)

(85-115)

(85-115)

0018

Quanterra

COC Signature Page

Lot or Batch #: 0032148	Initials/Date	Procedure #
Released By	KA 2-1-00	RICHWC5003 9
Received	RRoss 2/1/00	RICHWC5003 R.4
Released By	RRoss 2/8/00	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99