Quanterra

0050840

CERTIFICATE OF ANALYSIS

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

March 5, 1999

Attention: Joan Kessner

MAR 1999 RECEIVED Data

SAF Number	:	C99-009
Date First Sample Received	:	December 28, 1998
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W02640
Data Deliverable	:	45 Day Summary

I. Introduction

Between December 28, and December 30, 1989, three water samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
8CPM9P10	B0T1K5	Water	12/28/98
8CPNET10	B0T135	Water	12/30/98
8CPNF010	B0T146	Water	12/30/98

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:

Gas Proportional Counting
Gross Alpha by method RICH-RC-5014
Gross Beta by method RICH-RC-5014
Liquid Scintillation Counting
Tritium by method RICH-RC-5007

III. Quality Control

The analytical results for the analysis performed under SDG W02640 include a minimum of one Laboratory Control Sample (LCS), one matrix spike (MS), one matrix spike duplicate (MSD), and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

Gas Proportional Counting

Gross Alpha by method RICH-RC-5014

The LCS, batch blank, samples and sample duplicate (B0T135) results are within contractual requirements.

Gross Beta by method RICH-RC-5014

The LCS, batch blank, results are within contractual requirements. The sample and sample duplicate (B0T146) did not agree this was attributed to dissolved solids in the matrix creating a non-homogenous matrix. Data is reported.

Liquid Scintillation Counting

Tritium by method RICH-RC-5007

The LCS, batch blank, samples and sample duplicates (B0T1K5) 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:

Doug Swenson
Project Manager

Quanterra

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	8CPM9P10	**MATRIX:**	WATER
CLIENT ID:	B0T1K5	**DATE RECEIVED:**	12/28/98 2:23:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
ALPHA	2.04E+00	J	1.6E+00	1.6E+00	1.74E+00	pCi/L	100.00%	RICHRC5014
BETA	4.25E+00		1.7E+00	1.7E+00	3.01E+00	pCi/L	100.00%	RICHRC5014-B
TRITIUM	3.55E+04		8.2E+02	2.8E+03	3.14E+02	pCi/L	88.10%	RICHRC5007

Number of Results: 3

Result = IDL When Not Detected

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

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	8CPNET10	**MATRIX:**	WATER
CLIENT ID:	B0T135	**DATE RECEIVED:**	12/30/98 2:47:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
ALPHA	8.73E-01	U	9.0E-01	9.0E-01	9.36E-01	pCi/L	100.00%	RICHRC5014
BETA	6.14E+00		1.8E+00	1.8E+00	2.89E+00	pCi/L	100.00%	RICHRC5014-B
TRITIUM	4.24E+03		3.1E+02	5.0E+02	3.14E+02	pCi/L	88.10%	RICHRC5007

Number of Results: 3

Result = IDL When Not Detected

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

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	8CPNF010	**MATRIX:**	WATER
CLIENT ID:	B0T146	**DATE RECEIVED:**	12/30/98 2:47:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
ALPHA	3.59E+00		2.3E+00	2.3E+00	2.70E+00	pCi/L	100.00%	RICHRC5014
BETA	1.54E+01		2.3E+00	2.7E+00	2.90E+00	pCi/L	100.00%	RICHRC5014-B
TRITIUM	1.60E+04		5.6E+02	1.3E+03	3.14E+02	pCi/L	88.10%	RICHRC5007

Number of Results: 3

Result = IDL When Not Detected

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

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DUPLICATE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCPM9P1R	**MATRIX:**	WATER
CLIENT ID:	B0T1K5	**DATE RECEIVED:**	12/28/98 2:23:00 P
ORIG LAB SAMPLE ID:	8CPM9P10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
TRITIUM	3.55E+04		8.2E+02	2.8E+03	3.14E+02	pCi/L	88.10%	RICHRC5007	3.55E+04	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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DUPLICATE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCPNET1R	**MATRIX:**	WATER
CLIENT ID:	B0T135	**DATE RECEIVED:**	12/30/98 2:47:00 P
ORIG LAB SAMPLE ID:	8CPNET10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
ALPHA	2.26E+00	J	1.4E+00	1.5E+00	1.37E+00	pCi/L	100.00%	RICHRC5014	8.73E-01	88.49%

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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DUPLICATE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCPNF01R	**MATRIX:**	WATER
CLIENT ID:	B0T146	**DATE RECEIVED:**	12/30/98 2:47:00 P
ORIG LAB SAMPLE ID:	8CPNF010		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BETA	7.82E+00		1.9E+00	2.0E+00	3.02E+00	pCi/L	100.00%	RICHRC5014-B	1.54E+01	65.28%

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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BLANK RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCQ13M1B	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
ALPHA	0.00E+00	U	3.0E-01	3.0E-01	9.30E-01	pCi/L	100.00%	RICHRC5014

Number of Results: 1

Result = IDL When Not Detected

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

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Quanterra

BLANK RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCQ13N1B	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BETA	3.84E-01	U	1.2E+00	1.2E+00	2.69E+00	pCi/L	100.00%	RICHRC5014-B

Number of Results: 1

Result = IDL When Not Detected

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

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LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCQ13L1M	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TRITIUM	2.73E+03		2.6E+02	3.9E+02	3.14E+02	pCi/L	88.10%	2.74E+03	99.89%

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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LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCQ13L1S	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TRITIUM	2.53E+03		2.6E+02	3.8E+02	3.14E+02	pCi/L	88.10%	2.74E+03	92.43%

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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LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCQ13M1S	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
ALPHA	1.97E+01		2.9E+00	3.7E+00	6.73E-01	pCi/L	100.00%	2.27E+01	86.70%

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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LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02640 / 7192
LAB SAMPLE ID:	JCQ13N1S	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
BETA	2.33E+01		2.4E+00	3.2E+00	2.43E+00	pCi/L	100.00%	2.27E+01	102.71%

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 Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	J8L290118 J8L310117
Client ID:	PGCD
Due Date:	2/11/99 2/12/99
Lab Sample Number or SDG:	9015261
Method Test Parameters:	Alpha
Matrix:	Water

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			X	
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			X	
2. Were all sample holding times met?	X			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	X			✓
C. QC Samples				
1. Is the blank yield within acceptance criteria			X	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	X			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	X			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			X	
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			X	
6. Is the LCS result within acceptance criteria?	X			✓
7. Is the LCS yield within acceptance criteria	X			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	X			✓
9. MS/MSD results and yield meet acceptance criteria?			X	
10. Duplicate sample results and yield meet acceptance criteria?	X			✓
D. Other				
1. Are all Nonconformances included and noted?			X	
2. Are all required forms filed out?	X			✓
3. Correct methodology used?	X			✓
4. Transcription checked? SKL 2/17/99	X			✓
5. Were all calculations checked at a minimum frequency?	X			✓
6. Units checked?	X			✓

Comments on any "No" response: _____

First Level Review: [signature] Date: 2/18/99

Second Level Review: [signature] Date: 3/5/99

Form #: LS-038.2 /96, Rev.4

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	S8L210118, S8L310117
Client ID:	PGE
Due Date:	2/11/99 2/12/99
Lab Sample Number or SDG:	9015262
Method Test Parameters:	Beta
Matrix:	Water W02640

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration 1. Is the calibration documentation included where applicable?			X	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			X	
2. Were all sample holding times met?	X			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	X			✓
C. QC Samples 1. Is the blank yield within acceptance criteria			X	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	X			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	X			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			X	
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			X	
6. Is the LCS result within acceptance criteria?	X			✓
7. Is the LCS yield within acceptance criteria	X			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	X			✓
9. MS/MSD results and yield meet acceptance criteria?			X	
10. Duplicate sample results and yield meet acceptance criteria?		X		
D. Other 1. Are all Nonconformances included and noted?	X			✓
2. Are all required forms filed out?	X			✓
3. Correct methodology used?	X			✓
4. Transcription checked? SCH 2/17/99	X			✓
5. Were all calculations checked at a minimum frequency?	X			✓
6. Units checked?	X			

Comments on any "No" response: gec 2/18/99 high. Miss match between Sa + Dups - NC

First Level Review: [signature] Date: 2/18/99

Second Level Review: [signature] Date: 3/5/99

Form #: LS-038.2 /96, Rev.4

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QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-99-

J8L290119

Project ID: PGW J8L310117 NCM Initiated by: SE 2/18/99.

Sample Numbers: SCPNF010 JCPNF01R

Tests: b-tr.

Matrix: H_2O W02640

Analytical Area (check appropriate area):

- ☐ Sample control
- ☐ Organic preparation
- ☐ Inorganic preparation
- ☐ GC
- ☐ HPLC
- ☐ GC/MS
- ☐ Wet chemistry
- ☐ Metals
- ☐ Reporting
- ☐ Data review
- ☒ Radiochemistry
- ☐ Bioassay

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

- ☐ 1. Holding time expired in transit
- ☐ 2. Sample received > 48 hrs. or 1/2 holding time has expired
- ☐ 3. Test added by client after expiration

Category II: Laboratory Dependent

- ☐ 4. Instrument failure
- ☐ 5. Analyst error
- ☐ 6. Login error
- ☐ 7. Miscommunication
- ☐ 8. Other (complete description required)

Category III: Analysis Reruns (QA/QC)

- ☐ 9. Surrogates
- ☐ 10. Internal Standards
- ☐ 11. Spike Recoveries
- ☐ 12. Blank Contamination

Category IV: Analysis Reruns (Confirmation)

- ☐ 13. Second column
- ☐ 14. Contamination check
- ☐ 15. Confirmation of matrix effects
- ☐ 16. Other (complete description required)

Quality Assurance/Quality Control

- ☐ 17. QC data reported outside of controls
- ☐ 18. Incorrect procedure used
- ☐ 19. SOP intentionally modified with QA and Tech. approval
- ☐ 20. Invalid instrument calibration
- ☐ 21. Insufficient sample received for proper analysis

Incorrect or Incomplete Client Deliverable

- ☐ 22. Hardcopy deliverable error
- ☐ 23. Electronic deliverable error

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☐ 26. Other (complete description required)
- ☒ 27. *Other (specify):* dupe miss-match

Comments/Explanation:

Notification (check appropriate area):

Client notified by (name and date):

- ☒ in writing CN
- ☐ by telephone
- ☐ by facsimile
- ☐ other (explain)

Client's name and response:

- ☐ process "as is"
- ☐ on hold until _____
- ☐ re-sample
- ☐ other (explain)

Project Manager (signature and date):

0018

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-99-_____

Corrective Action

Root Cause Initial and date: SB 2/18/99

inhomogeneity implied by differing residue weights. Further shown by the fact that the lighter counts higher than the heavier.

Corrective Action Initial and Date: SB 2/18/99.

Report

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

N/A

First Level Supervisor: [signature] Date: 2/18/99.

Responsible Manager: [signature] Date: 3/5/99

Quality Assurance Review

☒ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: [signature] Date: 3/5/99

Corrective Action Verification

☐ Verified

☐ Cannot Verify (specify reason): N/A

Nonconformance Memo Closure

QA signature/date: [signature] 3/5/99

0019

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): SRL290118

Client ID: BHT

Due Date: 2/12/99

Lab Sample Number or SDG: 9015260

Method Test Parameters: Tritium

Matrix: Water

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			X	
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			X	
2. Were all sample holding times met?	X			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	X			✓
C. QC Samples				
1. Is the blank yield within acceptance criteria			X	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	X			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	X			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			X	
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			X	
6. Is the LCS result within acceptance criteria?	X			✓
7. Is the LCS yield within acceptance criteria	X			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	X			✓
9. MS/MSD results and yield meet acceptance criteria?			X	✓
10. Duplicate sample results and yield meet acceptance criteria?	X			✓
D. Other				
1. Are all Nonconformances included and noted?			X	
2. Are all required forms filled out?	X			✓
3. Correct methodology used?	X			✓
4. Transcription checked? SCW 2/9/99	X			✓
5. Were all calculations checked at a minimum frequency?	X			✓
6. Units checked?	X			✓

Comments on any "No" response: _____

First Level Review: [signature] Date: 2/9/99

Second Level Review: [signature] Date: 3/5/99

Form #: LS-038.2/96, Rev 4

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0020

CHAIN OF

CUSTODY FORMS

Q-27020

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-009-4

Page 1 of 1

Collector: Mike Dorsey	Contact/Requester: JH KESSNER	Telephone No.: (509) 372-9538 MSIN FAX
SAF No.: C99-009	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-HR3-IAM (2) GW SAMPLING, NOVEMBER 1998	Logbook No.: WM-SML-H19	Ice Chest No.: SCOOTER Temp.
Shipped To (Lab): Quanterra Incorporated	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: N/A
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
SDG W02040 J8L290118

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
FAX COPIES OF TMA & QES LOG-IN TO DL STEWART (372-1704) & JM DUNCAN (372-9052).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0T1K3 (F)		W	12-28-98	1140	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0T1K5		W			1x1000-mL P	Gross Alpha & Gross Beta	HNO3 to pH <2
B0T1K5		W			1x20-mL P	Activity Scan 8CPM9P10	None
B0T1K5		W			1x1000-mL P/G	Tritium - H3	None
B0T1K5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0T1K5		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)	Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
MC Dorsey	MC Dorsey		1340 12/28/98	KB Hulse	KB Hulse		12/28/98 1340
KB Hulse	KB Hulse		12/28/98 1423	Hernandez			12-28-98 1423
				<100cpm			

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	

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

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/28/98 1425 SG#: _____

Work Order Number: _____ SAF #: C99-009

Shipping Container ID: Scooter Chain of Custody # C99-009-4

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 4°
5. Vermiculite/packing materials is Wet [ ] Dry [✓] n/a
6. Number of samples in shipping container: 6
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: Stuedelberg Date: 12-28-98

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

29-Dec-98

(P3) 12/30/98

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PNN B0T1K5		12/29/98 7:39:00 AM	QUAD21A	12/29/98 12:02:08 PM	B0T1K5	30	2	-0.03333333	39	0.27777778
	LIQUID		Bkg:	12/29/98 10:23:25 AM	BKG	180	18	0.1	184	1.02222222

Anl Date: 12/29/98 Tot Sa, Alq: 2.00E+01 , 1.00E+01 Alp; (Dpm/ -1.14E-01 (uCi/ -1.02E-07 (pCi/ -5.12E+00 + 2.4E+01 CAT I 2.0E-02 Lab
Ppt mg: 3.9 Units: ml , ml Bet; Alq): 5.74E-01 Sa): 5.17E-07 L|g): 2.59E+01 + 2.1E+01 1.9E+00 Alq L|g

PNN B0T2B2		12/29/98 7:39:00 AM	QUAD21B	12/29/98 12:02:08 PM	B0T2B2	30	31	0.938888889	870	27.9722222
	LIQUID		Bkg:	12/29/98 10:23:25 AM	BKG	180	17	0.094444444	185	1.02777778

Anl Date: 12/29/98 Tot Sa, Alq: 2.00E+01 , 1.00E+01 Alp; (Dpm/ 2.15E+00 (uCi/ 1.93E-03 (pCi/ 9.66E+01 + 3.0E+01 CAT I 2.6E-01 Lab
Ppt mg: 4.1 Units: L , ml Bet; Alq): 5.39E+01 Sa): 4.86E-02 L|g): 2.43E+03 + 8.6E+01 2.1E-02 Alq L|g

PNN B0T3J1		12/29/98 7:39:00 AM	QUAD21C	12/29/98 12:02:08 PM	B0T3J1	30	6	0.127777778	191	5.06666667
	LIQUID		Bkg:	12/29/98 10:23:25 AM	BKG	180	13	0.072222222	234	1.3

Anl Date: 12/29/98 Tot Sa, Alq: 2.00E+01 , 1.00E+01 Alp; (Dpm/ 2.44E-01 (uCi/ 2.20E-07 (pCi/ 1.10E+01 + 2.7E+01 CAT I 2.3E+00 Lab
Ppt mg: 6 Units: ml , ml Bet; Alq): 9.97E+00 Sa): 8.98E-06 L|g): 4.49E+02 + 4.2E+01 1.1E-01 Alq L|g

PNN B0T3X5		12/29/98 7:39:00 AM	QUAD21D	12/29/98 12:02:08 PM	B0T3X5	30	82	2.633333333	1089	35.3555556
	LIQUID		Bkg:	12/29/98 10:23:25 AM	BKG	180	18	0.1	170	0.94444444

Anl Date: 12/29/98 Tot Sa, Alq: 2.00E+01 , 1.00E+01 Alp; (Dpm/ 7.33E+00 (uCi/ 6.60E-06 (pCi/ 3.30E+02 + 4.2E+01 CAT I 7.6E-02 Lab
Ppt mg: 3 Units: ml , ml Bet; Alq): 6.83E+01 Sa): 6.15E-05 L|g): 3.08E+03 + 9.7E+01 1.6E-02 Alq L|g

PNN B0T843		12/29/98 7:39:00 AM	QUAD22A	12/29/98 12:02:11 PM	B0T843	30	110	3.544444444	65	0.97777778
	LIQUID		Bkg:	12/29/98 10:23:33 AM	BKG	180	22	0.122222222	214	1.18888889

Anl Date: 12/29/98 Tot Sa, Alq: 2.00E+01 , 1.00E+01 Alp; (Dpm/ 1.05E+01 (uCi/ 9.42E-06 (pCi/ 4.71E+02 + 4.6E+01 CAT I 5.3E-02 Lab
Ppt mg: 2.5 Units: ml , ml Bet; Alq): -2.99E-01 Sa): -2.69E-07 L|g): -1.35E+01 + 2.0E+01 2.0E-02 Alq L|g

PNN B0T844		12/29/98 7:39:00 AM	QUAD22B	12/29/98 12:02:11 PM	B0T844	30	127	4.116666667	79	1.31111111
	LIQUID		Bkg:	12/29/98 10:23:33 AM	BKG	180	21	0.116666667	238	1.32222222

Anl Date: 12/29/98 Tot Sa, Alq: 2.00E+01 , 1.00E+01 Alp; (Dpm/ 1.27E+01 (uCi/ 1.14E-05 (pCi/ 5.71E+02 + 5.1E+01 CAT I 4.4E-02 Lab
Ppt mg: 1.9 Units: ml , ml Bet; Alq): -4.16E-02 Sa): -3.74E-08 L|g): -1.87E+00 + 2.0E+01 2.0E-02 Alq L|g

Q-21025

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # C99-009-105
		Page 1 of 1

Collector D B. BREWINGTON (RFS)	**Contact/Requester** JH KESSNER	**Telephone No.** (509) 372-9538 **MSIN** **FAX**
SAF No. C99-009	**Sampling Origin** HANFORD SITE	**Purchase Order/Charge Code**
Project Title 100-HR3-IAM (2) GW SAMPLING, NOVEMBER 1998	**Logbook No.** WM SMP-1118	**Ice Chest No.** ZRC 46032 **Temp.** 4 °C
Shipped To (Lab) Quanterra Incorporated	**Method of Shipment** GOVT. VEHICLE	**Bill of Lading/Air Bill No.** N/A
Protocol CERCLA	**Data Turnaround** 45 Days	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** **
SDG W026010 J8L310117

SPECIAL INSTRUCTIONS **Hold Time** **Total Activity Exemption:** Yes ☒ No ☐
FAX COPIES OF TMA & QES LOG-IN TO DL STEWART (372-1704) & JM DUNCAN (372-9052).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0T131 (F)		W	12-30-98	0910	1x500-mL G/P	ICP Metals - 6010A RCRA GW to ST Lab	HNO3 to pH <2
B0T135		W	↓	↓	1x1000-mL P	Gross Alpha & Gross Beta	HNO3 to pH <2
B0T135		W	↓	↓	1x20-mL P	Activity Scan 8CPNET10	None
B0T135		W	↓	↓	1x1000-mL P	Tritium - H3	None
B0T135		W	↓	↓	1x500-mL G/P	ICP Metals - 6010A RCRA GW to ST Lab	HNO3 to pH <2
B0T135		W	↓	↓	1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D B BREWINGTON (RFS)	DEC 30 1998 1447	Hudelleer	DEC 30 1998 1447
Relinquished By	Date/Time	Received By <100 cpm	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 = Wipe	
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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-009-32

Page 1 of 1

Collector: D.R. BREWINGTON (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 372-9538 MSIN FAX
SAF No.: C99-009	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-HR3-IAM (2) GW SAMPLING NOVEMBER 1998	Logbook No.: WM-SMP-H 18	Ice Chest No.: EMG 46032 Temp. 0 °C
Shipped To (Lab): Quanterra Incorporated	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: N/A
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
FAX COPIES OF TMA & QES LOG-IN TO DL STEWART (372-1704) & JM DUNCAN (372-9052).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0T146		W	12-30-98	0956	1x1000-mL P	Gross Alpha & Gross Beta	HNO3 to pH <2
B0T146		W	↓	↓	1x20-mL P	Activity Scan — SCPNF010	None
B0T146		W	↓	↓	1x1000-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D.R. BREWINGTON (RFS)			DEC 30 1998 1447				DEC 30 1998 1447
Relinquished By			Date/Time	Received By			Date/Time
				L100LPM			
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 = Wipe	
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: 12/30 1447 SG#: W02640

Work Order Number: J8L310117 SAF #: C99-009 W99-012 W99-011

Shipping Container ID: ERC 96-D32 Chain of Custody # C99-009-105+32 W99-011-309 W99-012243

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 3°
5. Vermiculite/packing materials is Wet [ ] Dry [✓] na
6. Number of samples in shipping container: 21
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: 12-30-98

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

31 Dec 98

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI ~~PGW~~ B0T135		12/30/98 3:09:00 PM	QUAD21B	12/31/98 9:54:58 AM	B0T135	30	23	0.701666667	92	2.05833333
	LIQUID		Bkg:	12/31/98 1:51:40 AM	BKG	600	39	0.065	605	1.00833333
Anl Date: 12/31/98	Tot Sa, Alq: 2.00E+01	, 1.00E+01	Alp;	(Dpm/ 2.19E+00	(uCi/ 1.97E-06	(pCi/ 9.87E+01	+ 2.9E+01	CAT I	2.5E-01	Lab Alq Lfg
Ppt mg: 2.4	Units: ml	, ml	Bet;	Alq): 3.57E+00	Sa): 3.22E-06	Lfg): 1.61E+02	+ 2.7E+01		3.1E-01	
BHI ~~PGW~~ B0T146		12/30/98 3:09:00 PM	QUAD21C	12/31/98 9:54:58 AM	B0T146	30	17	0.475	83	1.58666667
	LIQUID		Bkg:	12/31/98 1:51:40 AM	BKG	600	55	0.091666667	708	1.18
Anl Date: 12/31/98	Tot Sa, Alq: 2.00E+01	, 1.00E+01	Alp;	(Dpm/ 1.42E+00	(uCi/ 1.28E-06	(pCi/ 6.41E+01	+ 2.7E+01	CAT I	3.9E-01	Lab Alq Lfg
Ppt mg: 4.2	Units: ml	, ml	Bet;	Alq): 2.87E+00	Sa): 2.58E-06	Lfg): 1.29E+02	+ 2.7E+01		3.9E-01	
PGW B0T321		12/30/98 3:09:00 PM	QUAD21A	12/31/98 9:54:58 AM	B0T321	30	8	0.173333333	107	2.52166667
	LIQUID		Bkg:	12/31/98 1:51:40 AM	BKG	600	56	0.093333333	627	1.045
Anl Date: 12/31/98	Tot Sa, Alq: 2.00E+01	, 1.00E+01	Alp;	(Dpm/ 4.36E-01	(uCi/ 3.92E-07	(pCi/ 1.96E+01	+ 2.3E+01	CAT I	1.3E+00	Lab Alq Lfg
Ppt mg: 1.9	Units: ml	, ml	Bet;	Alq): 4.95E+00	Sa): 4.46E-06	Lfg): 2.23E+02	+ 3.1E+01		2.2E-01	
PGW B0T836		12/30/98 3:09:00 PM	QUAD23B	12/31/98 9:55:06 AM	B0T836	30	29	0.861666667	102	2.30833333
	LIQUID		Bkg:	12/31/98 1:51:52 AM	BKG	600	63	0.105	655	1.09166667
Anl Date: 12/31/98	Tot Sa, Alq: 2.00E+01	, 1.00E+01	Alp;	(Dpm/ 2.63E+00	(uCi/ 2.37E-06	(pCi/ 1.19E+02	+ 3.0E+01	CAT I	2.1E-01	Lab Alq Lfg
Ppt mg: 3	Units: ml	, ml	Bet;	Alq): 3.87E+00	Sa): 3.49E-06	Lfg): 1.75E+02	+ 2.8E+01		2.9E-01	
PGW B0T861		12/30/98 3:09:00 PM	QUAD22B	12/31/98 9:55:[illegible] AM	B0T861	30	44	1.386666667	121	2.63666667
	LIQUID		Bkg:	12/31/98 1:51:[illegible] AM	BKG	600	48	0.08	838	1.39666667
Anl Date: 12/31/98	Tot Sa, Alq: 2.00E+01	, 1.00E+01	Alp;	(Dpm/ 4.30E+00	(uCi/ 3.87E-06	(pCi/ 1.94E+02	+ 3.6E+01	CAT I	1.3E-01	Lab Alq Lfg
Ppt mg: 3.4	Units: ml	, ml	Bet;	Alq): 4.20E+00	Sa): 3.78E-06	Lfg): 1.89E+02	+ 3.0E+01		2.6E-01	
PGW B0T878		12/30/98 3:09:00 PM	QUAD23C	12/31/98 9:55:06 AM	B0T878	30	21	0.61	103	2.375
	LIQUID		Bkg:	12/31/98 1:51:52 AM	BKG	600	54	0.09	635	1.05833333
Anl Date: 12/31/98	Tot Sa, Alq: 2.00E+01	, 1.00E+01	Alp;	(Dpm/ 1.73E+00	(uCi/ 1.56E-06	(pCi/ 7.78E+01	+ 2.6E+01	CAT I	3.2E-01	Lab Alq Lfg
Ppt mg: 1.7	Units: ml	, ml	Bet;	Alq): 4.24E+00	Sa): 3.82E-06	Lfg): 1.91E+02	+ 2.9E+01		2.6E-01	

Quanterra

COC Signature Page

Batch #: 9015261	Initials/Date	Procedure #
Released By	JH 2-10-99	RC0009
Received	EPS 2/10/99	RICHRC 5016.1 + 5014.0
Released By	EPS 2/11/99	n/a
Received	[illegible] 2/11/99	RICHRDCC03 Rev 2
Released By	[illegible] 2/12/99	n/a
Received	[illegible] 2/12/99	RICHTS5004
Released By	[illegible] 2/17/99	n/a
Received	SE 2/18/99	SE 2/18/99 RichRC0002.
Released By	SE 2/18/99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.0, 8/98

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 1/15/99
Time: 15:44:31

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
			_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGrou
_ Bench Sheet Copied per COC

Extractionist: _____

Concentrationist: _____

QC BATCH: 9015261

PREP DATE: 1/15/99
COMP DATE: 1/15/99

Reviewer/Date: _____ / 0/00/00

Gross Alpha by GPC using Am-241 curve
Gross Alpha PrpRC5014

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJ1	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	2/11/99	J8L290118-001 **CPM9P-1-01**		AZ	S7	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-001 **CPNET-1-01**		AZ	S7	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-001 **CPNET-1-04X**		AZ	S7	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-002 **CPNF0-1-01**		AZ	S7	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	0/00/00	J9A150000-261 **CQ13M-1-01B**		AZ	S7	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13M1B														
0/00/00	0/00/00	J9A150000-261 **CQ13M-1-02C**		AZ	S7	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13M1S														

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 6

030

Quanterra

COC Signature Page

Batch #: 9015262	Initials/Date	Procedure #
Released By	DH 2-10-99	RC0009
Received	EPS 2/10/99	AICHRC5016.1+5014.0
Released By	EPS 2/11/99	n/a
Received	DD 2/11/99	RICHRD000 3 Rev 2
Released By	[illegible] 2/16/99	n/a
Received	KJ 2/16/99	RICHTS5004
Released By	SC 2/17/99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

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RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 1/15/99
Time: 15:46:11

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
_	_		_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
				_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGro
_ Bench Sheet Copied per COC

Extractionist: _____
_____

Concentrationist: _____
_____

Reviewer/Date: _____ / 0/00/00

QC BATCH: 9015262

PREP DATE: 1/15/99
COMP DATE: 1/15/99

Gross Beta by GPC using Sr/Y-90 curve
Gross Beta PrpRC5014

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJ1	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	2/11/99	J8L290118-001 **CPM9P-1-02**		BC	S8	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-001 **CPNET-1-02**		BC	S8	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-002 **CPNF0-1-02**		BC	S8	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-002 **CPNF0-1-04X**		BC	S8	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	0/00/00	J9A150000-262 **CQ13N-1-01B**		BC	S8	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13N1B														
0/00/00	0/00/00	J9A150000-262 **CQ13N-1-02C**		BC	S8	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13N1S														

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 6

Quanterra

COC Signature Page

Batch #: 9015260	Initials/Date	Procedure #
Released By	2-4-99	Richcoooo09
Received	2-4-99	RICHRC5007
Released By	2-5-99	n/a
Received	2/5/98	RICHRC0001
Released By	2/8/99	n/a
Received	2/8/99	RICHTS5007
Released By	2/9/99	n/a
Received	2/9/99	RICHRC0002 Rev 2
Released By	2/9/99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

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RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 1/15/99
Time: 15:42:39

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
			_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGrou
_ Bench Sheet Copied per COC

Extractionist: _____
_____

Concentrationist: _____
_____

QC BATCH: 9015260

PREP DATE: 1/15/99
COMP DATE: 1/15/99

Reviewer/Date: _____ / 0/00/00

Tritium by Liquid Scint
H-3 Prp/SepRC5007

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJI	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	2/11/99	J8L290118-001 **CPM9P-1-03**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/11/99	J8L290118-001 **CPM9P-1-04X**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-001 **CPNET-1-03**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	2/12/99	J8L310117-002 **CPNF0-1-03**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:															
0/00/00	0/00/00	J9A150000-260 **CQ13L-1-01B**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13L1X														
0/00/00	0/00/00	J9A150000-260 **CQ13L-1-02C**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13L1M														
0/00/00	0/00/00	J9A150000-260 **CQ13L-1-03B**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13L1N														

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 1/15/99
Time: 15:42:39

QC BATCH: 9015260

PREP DATE: 1/15/99
COMP DATE: 1/15/99

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJI	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	0/00/00	J9A150000-260 **CQ13L-1-04C**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13L1S														
0/00/00	0/00/00	J9A150000-260 **CQ13L-1-05B**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13L2N														
0/00/00	0/00/00	J9A150000-260 **CQ13L-1-06B**		AR	S6	WATER		NA	NA	NA		.0		.0	
COMMENTS:	JCQ13L3N														

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M - CLIENT REQ MS/MSD
:

NUMBER OF WORK ORDERS IN BATCH: 10

0035

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

February 18, 1999

Attention: Joan Kessner

Project Number	:	550.184
SDG	:	W02640
Number of Samples	:	Six (6)
Sample Matrix	:	Water
Data Deliverable	:	45 day Summary
Date SDG Closed	:	January 11, 1999

II. Introduction

On December 28 and December 31, a total of six (6) "water" samples were received by at Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Samples B0T1K3 and B0T1K5 were received at a temperature of 1 degree C. Upon receipt, the sample was given the following laboratory ID numbers to correspond with the specific client ID's:

St. Louis ID	BHI ID	SAF ID	Matrix	Date of Receipt
20347-001	B0T1K3	C99-009	WATER	28-DEC-98
20347-002	B0T1K5	C99-009	WATER	28-DEC-98
20400-001	B0T144	C99-009	WATER	31-DEC-98
20400-002	B0T145	C99-009	WATER	31-DEC-98
20400-003	B0T131	C99-009	WATER	31-DEC-98
20400-004	B0T135	C99-009	WATER	31-DEC-98

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: IC Anions - 300.0, {CL,FL,NO2,NO3,SO4}.
ICP Metals - 6010A RCRA GW

Deviation from Request: No Deviation from requested methods.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK - Quality Control Blank, Method Blank
QCLCS - Quality Control Laboratory Control Sample, Blank Spike
DUP - Laboratory Duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate

V. Comments

General: There are no general comments to be made.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There are no metals comments for this sample delivery group.

Wet Chemistry: A Laboratory Control Sample, Method Blank, Matrix Spike and Laboratory Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There are no wet chemistry comments for this sample delivery group.

I certify that this Summary Package 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:

Shiela Louvier

Shiela M. Louvier
St. Louis Project Manager

W02460

Quanterra January 04, 1999 03:25 pm
Account: 10722 Project: 550.184 Quanterra-Richland QAS No. 550.184 Rev. 3
Master Sample Login: 20347

Project Manager: S. Louvier

Reviewed by and Date: Sheila Louvier 1-4-99

Sample Header Template:

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category / (Container Numbers:% Filled)	Rad Sample No.
20347-001	B0T1K3	Water	28-DEC-98 11:40	28-DEC-98 14:23		27-JAN-99	AIRBORNE	1	Screening not Required
SAF C99-009									
1	PN - Plastic-500ml	ICAPD/6010/Q4	S	HNO3	20-JAN-99	26-JUN-99	S4E	(419569:100)	
20347-002	B0T1K5	Water	28-DEC-98 11:40	28-DEC-98 14:23		27-JAN-99	AIRBORNE	1	Screening not Required
SAF C99-009									
1	PN - Plastic-500ml	CL/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
1		FL/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
1		ICAP/6010/Q4	S	HNO3	20-JAN-99	26-JUN-99	S4E	(419570:100)	
1		NO2/300.0/Q4	S	COLD	20-JAN-99	30-DEC-98	S4E	(419571:99)	
1		NO3/300.0/Q4	S	COLD	20-JAN-99	30-DEC-98	S4E	(419571:99)	
1		SO4/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
20347-002DUP	B0T1K5	Water	28-DEC-98 11:40	28-DEC-98 14:23		27-JAN-99	AIRBORNE	1	Screening not Required
SAF C99-009									
1	PN - Plastic-500ml	CL/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
1		FL/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
1		NO2/300.0/Q4	S	COLD	20-JAN-99	30-DEC-98	S4E	(419571:99)	
1		NO3/300.0/Q4	S	COLD	20-JAN-99	30-DEC-98	S4E	(419571:99)	
1		SO4/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
20347-002MS	B0T1K5	Water	28-DEC-98 11:40	28-DEC-98 14:23		27-JAN-99	AIRBORNE	1	Screening not Required
SAF C99-009									
1	PN - Plastic-500ml	CL/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
1		FL/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
1		ICAP/6010/Q4	S	HNO3	20-JAN-99	26-JUN-99	S4E	(419570:100)	
1		NO2/300.0/Q4	S	COLD	20-JAN-99	30-DEC-98	S4E	(419571:99)	
1		NO3/300.0/Q4	S	COLD	20-JAN-99	30-DEC-98	S4E	(419571:99)	
1		SO4/300.0/Q4	S	COLD	20-JAN-99	25-JAN-99	S4E	(419571:99)	
20347-002MSD	B0T1K5	Water	28-DEC-98 11:40	28-DEC-98 14:23		27-JAN-99	AIRBORNE	1	Screening not Required
SAF C99-009									
1	PN - Plastic-500ml	ICAP/6010/Q4	S	HNO3	20-JAN-99	26-JUN-99	S4E	(419570:100)	

3*-Sample has not been rad screened.

000004

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-009-4

Page 1 of 1

Collector: Mike Dorsey	Contact/Requester: JH KESSNER	Telephone No.: (509) 372-9538 MSIN FAX
SAF No.: C99-009	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-HR3-IAM (2) GW SAMPLING NOVEMBER 1998	Logbook No.: WM-5M2-H19	Ice Chest No.: SCOUTER Temp.
Shipped To (Lab): Quanterra Incorporated	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: N/A
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
FAX COPIES OF TMA & QES LOG-IN TO DL STEWART (372-1704) & JM DUNCAN (372-9052).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0T1K3 (F)		W	12-28-98	1140	1x500-mL G(P)	ICP Metals - 6010A RCRA GW 100% ph-1	HNO3 to pH <2
B0T1K5		W			1x1000-mL P	~~Gross Alpha & Gross Beta~~	HNO3 to pH <2
B0T1K5		W			1x20-mL P	~~Activity Scan~~ 12/28/98	None
B0T1K5		W			1x1000-mL P G 7821	~~Tritium - H3~~	None
B0T1K5		W			1x500-mL G(P)	ICP Metals - 6010A RCRA GW 100% ph-1	HNO3 to pH <2
B0T1K5		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate) 100%	Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
MC Dorsey	MC Dorsey		1340 12/28/98	KB Hulse	KB Hulse		12/28/98 1340
KB Hulse	KB Hulse		12/28/98 1423	Heidelberg			12-28-98 1423
Heidelberg			12-28-98 1600	Joe Tiernin			12-29-98 0800
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liquid	
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: [illegible] SG#: _____

Work Order Number: _____ SAF #: C99-009

Shipping Container ID: Snooper Chain of Custody #: C99-009-4

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 4°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 6
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: [illegible] Date: [illegible]

Telephoned To: _____ On _____ By _____

Quanterra
Environmental Services

017463

Login No.: 20347

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: PNNL
Date: 12-29-98 Time: 0900
Project No: 550: 184
Initiated by: Joe Tiemann
Shipper/No: Airborne / 4717625-315
RFA/COC Numbers: C99-009-4

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☒ Sample received without proper preservative.
   - ☒ Cooler temperature not within 4-C ± 2-C
     Record temperature: 1°C
   - ☐ pH
   - ☐ other:
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain:
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain:
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below):

☐ **No variances were noted during sample receipt.** **Cooler Temperature Upon Receipt:** 1°C

Notes:

Corrective Action:

☐ Client's Name: Informed verbally on: By:

☐ Client's Name: Informed in writing on: By:

☐ Sample(s) processed "as is".

☐ Sample(s) on hold until: If released, notify:

Sample Control Supervisor Review: (or designate) Joe Tiemann Date: 12-29-98

Project Management Review: Sheila Lourier Date: 12-31-98

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 11/24/95

000057

WO 2640

Quanterra December 31, 1998 01:15 pm
Account: 10722 Project: 550.184 Quanterra Richland QAS No. 550.184 Rev. 3
Master Sample Login: 20400

Project Manager S. Louvier

DH

Reviewed by and Date: Sheila Louvier 1-4-99

Sample Header Template:

Sample No / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
20400-001 SAF C99-009	B0T144	Water	30-DEC-98 09:56	31-DEC-98 08:00	29-JAN-99	AIRBORNE	1	Screening not Required

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	PN Plastic 500ml	ICAPD/6010/Q4	S	HNO3	22-JAN-99	29-JUN-99	R13A	(420877:100)

Sample No / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
20400-002 SAF C99-009	B0T145	Water	30-DEC-98 09:56	31-DEC-98 08:00	29-JAN-99	AIRBORNE	3*	R8064-001

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	PN Plastic 500ml	CL/300.0/Q4	S	COLD	22-JAN-99	27-JAN-99	R13A	(420879:99)
1		FL/300.0/Q4	S	COLD	22-JAN-99	27-JAN-99	R13A	(420879:99)
1		ICAP/6010/Q4	S	HNO3	22-JAN-99	28-JUN-99	R13A	(420878:100)
1		NO2/300.0/Q4	S	COLD	22-JAN-99	01-JAN-99	R13A	(420879:99)
1		NO3/300.0/Q4	S	COLD	22-JAN-99	01-JAN-99	R13A	(420879:99)
1		SO4/300.0/Q4	S	COLD	22-JAN-99	27-JAN-99	R13A	(420879:99)
1	VI Vial 20ml	RAD/SCREEN/Q4	S	COLD	22-JAN-99	29-JUN-99	R13A	(420880:100)

Sample No / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
20400-003 SAF C99-009	B0T131	Water	30-DEC-98 09:10	31-DEC-98 08:00	29-JAN-99	AIRBORNE	1	Screening not Required

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	PN Plastic 500ml	ICAPD/6010/Q4	S	HNO3	22-JAN-99	29-JUN-99	R13A	(420881:100)

Sample No / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
20400-004 SAF C99-009	B0T135	Water	30-DEC-98 09:56	31-DEC-98 08:00	29-JAN-99	AIRBORNE	1	Screening not Required

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	PN Plastic 500ml	CL/300.0/Q4	S	COLD	22-JAN-99	27-JAN-99	R13A	(420885:99)
1		FL/300.0/Q4	S	COLD	22-JAN-99	27-JAN-99	R13A	(420885:99)
1		ICAP/6010/Q4	S	HNO3	22-JAN-99	28-JUN-99	R13A	(420884:100)
1		NO2/300.0/Q4	S	COLD	22-JAN-99	01-JAN-99	R13A	(420885:99)
1		NO3/300.0/Q4	S	COLD	22-JAN-99	01-JAN-99	R13A	(420885:99)
1		SO4/300.0/Q4	S	COLD	22-JAN-99	27-JAN-99	R13A	(420885:99)

00008

3*=Sample has not been rad screened.

temp 2°c cus# 017482

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-009-33

Page 1 of 1

Collector: D.R. BREWINGTON (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 372-9538 MSIN FAX
SAF No.: C99-009	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100 HR3-IAM (2) GW SAMPLING, NOVEMBER 1998	Logbook No.: WHD-SMA-418	Ice Chest No.: 845157 Temp.: 4 °C
Shipped To (Lab): Quanterra St. Louis	Method of Shipment: GOVT VEHICLE	Bill of Lading/Air Bill No.: 0047196273 12
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
FAX COPIES OF TMA & QES LOG-IN TO DL STEWART (372-1704) & JM DUNCAN (372-9052).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0T144 (F)		W	12-30-98	0456	1x500-mL G/P	ICP Metals - 6010A RCRA GW 100% pH-1	HNO3 to pH <2
B0T145		W	↓	↓	1x500-mL G/P	ICP Metals - 6010A RCRA GW ↓ ↓	HNO3 to pH <2
B0T145		W	↓	↓	1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate) 100%	Cool 4C
B0T145		W	↓	↓	1x20-mL P	Activity Scan 100%	None

Relinquished By (Print)	Sign	Date/Time	Received By (Print)	Sign	Date/Time
D.R. BREWINGTON (RFS)		DEC 30 1998	Airborne		
Airborne					12-31-98 0800

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# C99-009-10

Collector: D B BREWINGTON (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 372-9538 MSIN FAX
SAF No.: C99-009	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-HR3-IAM (2) GW SAMPLING, NOVEMBER 1998	Logbook No.: WHT-SMPL-0118	Ice Chest No.: ERC 96 032 Temp.: 4 °C
Shipped To (Lab): Quanterra Incorporated	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: N/A
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
FAX COPIES OF TMA & QES LOG-IN TO DL STEWART (372-1704) & JM DUNCAN (372-9052).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0T131 (F)		W	12-30-98	0910	1x500-mL G/P	ICP Metals - 6010A RCRA GW 100% pH-1	HNO3 to pH <2
B0T135		W	↓	↓	1x1000-mL P	~~Gross Alpha & Gross Beta~~	HNO3 to pH <2
B0T135		W	↓	↓	1x20-mL P	~~Activity Scan~~	None
B0T135		W	↓	↓	1x1000-mL P	~~Tritium - H3~~	None
B0T135		W	↓	↓	1x500-mL G/P	ICP Metals - 6010A RCRA GW 100% pH-1	HNO3 to pH <2
B0T135		W	↓	↓	1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate) 100%	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D B BREWINGTON (RFS)	DEC 30 1998 1447	Heidelberg	DEC 30 1998 1447
Heidelberg	12-30-98 1600	for Turner	12-31-98 0800
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

00010

Quanterra Environmental Services

017482

Login No.: 20400

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: ANNL

Date: 12-31-98 Time: 0800

Project No: 550.184

Initiated by: Joe Tiemann

Shipper/No: Airborne / 4719627-312

RFA/COC Numbers: C99-009-33, - 105

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☒ **No variances were noted during sample receipt.** **Cooler Temperature Upon Receipt:** C-W5-137-2°

Notes: _____

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) Joe Tiemann Date: 12-31-98

Project Management Review: Sheila Lourier Date: 1-4-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 11/24/95

000011

METALS

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICAP Metals - Dissolved
Method: EPA 6010
Matrix: LIQUID

Client ID: B0T1K3

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Quanterra ID : 20347-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	36.2	UG/L	B	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	58.0	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	70900	UG/L		5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	34.5	UG/L		10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	3.0	UG/L	U	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	85.3	UG/L	B	100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	16100	UG/L		5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	10.1	UG/L	B	15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	15.8	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	3960	UG/L	B	5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	13900	UG/L		5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	11.4	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	288	UG/L		20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	368	UG/L		50.0	1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Client ID: B0T1K5

Quanterra ID : 20347-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	37.8	UG/L	B	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	56.9	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	69600	UG/L		5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	37.1	UG/L		10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	4.0	UG/L	B	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	623	UG/L		100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	15800	UG/L		5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	12.0	UG/L	B	15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	15.8	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	3570	UG/L	B	5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	13700	UG/L		5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	12.2	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	383	UG/L		20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	360	UG/L		50.0	1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Client ID: B0T1K5

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Quanterra ID : 20347-002MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	90	%REC			1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	85	%REC			1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	89	%REC			1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	98	%REC			1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	86	%REC			1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	83	%REC			1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	88	%REC			1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	90	%REC			1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	88	%REC			1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	92	%REC			1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	86	%REC			1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	89	%REC			1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	90	%REC			1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	79	%REC			1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	91	%REC			1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	90	%REC			1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	89	%REC			1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	87	%REC			1

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3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Client ID: B0T1K5

Quanterra ID : 20347-002MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	97	%REC			1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	98	%REC			1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	105	%REC			1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	92	%REC			1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	89	%REC			1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	92	%REC			1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	96	%REC			1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	90	%REC			1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	99	%REC			1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	86	%REC			1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	96	%REC			1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	93	%REC			1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	93	%REC			1

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3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICAP Metals - Dissolved
Method: EPA 6010
Matrix: LIQUID

Sample Date : 12/30/98
Receipt Date : 12/31/98
Report Date : 02/11/99

Client ID: B0T144

Quanterra ID : 20400-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	22.4	UG/L	B	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	103	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	83600	UG/L		5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	33.2	UG/L		10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	B	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	44.4	UG/L	B	100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	25700	UG/L		5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	2.9	UG/L	B	15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	15.8	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	5200	UG/L		5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	15600	UG/L		5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	11.4	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	18.6	UG/L	B	20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	586	UG/L		50.0	1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.134

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Sample Date : 12/30/98
Receipt Date : 12/31/98
Report Date : 02/11/99

Client ID: B0T145

Quanterra ID : 20400-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	21.3	UG/L	B	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	100	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	80200	UG/L		5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	59.9	UG/L		10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	7.0	UG/L	B	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	212	UG/L		100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	24600	UG/L		5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	5.6	UG/L	B	15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	17.2	UG/L	B	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	4260	UG/L	B	5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	14900	UG/L		5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	9.1	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	14.3	UG/L	B	20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	566	UG/L		50.0	1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICAP Metals - Dissolved
Method: EPA 6010
Matrix: LIQUID

Sample Date : 12/30/98
Receipt Date : 12/31/98
Report Date : 02/11/99

Client ID: B0T131

Quanterra ID : 20400-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	18.7	UG/L	U	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	80.6	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	49300	UG/L		5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	37.0	UG/L		10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	3.5	UG/L	B	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	73.4	UG/L	B	100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	11400	UG/L		5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	B	15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	15.8	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	4720	UG/L	B	5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	12500	UG/L		5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	12.0	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	7.0	UG/L	B	20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	247	UG/L		50.0	1

Quanterra Richland
1350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICP Metals-6010A TAL
Method: EPA 6010
Matrix: LIQUID

Client ID: B0T135

Sample Date : 12/30/98
Receipt Date : 12/31/98
Report Date : 02/11/99

Quanterra ID : 20400-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	32.4	UG/L	B	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	90.1	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	50700	UG/L		5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	44.5	UG/L		10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	3.0	UG/L	U	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	2100	UG/L		100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	11600	UG/L		5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	72.8	UG/L		15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	15.8	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	4360	UG/L	B	5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	12700	UG/L		5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	15.3	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	9.6	UG/L	B	20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	253	UG/L		50.0	1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 350.184

Category: ICAP Metals - Dissolved
Method: EPA 6010
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 02/11/99

Quanterra ID : QCLCS192193-1

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	98	%REC			1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	98	%REC			1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	96	%REC			1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	96	%REC			1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	96	%REC			1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	104	%REC			1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	97	%REC			1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	93	%REC			1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	92	%REC			1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	99	%REC			1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	96	%REC			1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	94	%REC			1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	97	%REC			1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	95	%REC			1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: ICAP Metals - Dissolved
Method: EPA 6010
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 02/11/99

Quanterra ID : QCBLK192193-1

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK192193-1	02/05/99	02/05/99	122	UG/L	B	200	1
Antimony	7440-36-0	QCBLK192193-1	02/05/99	02/05/99	45.9	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	200	1
Beryllium	7440-41-7	QCBLK192193-1	02/05/99	02/05/99	0.50	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK192193-1	02/05/99	02/05/99	4.2	UG/L	U	5.0	1
Calcium	7440-70-2	QCBLK192193-1	02/05/99	02/05/99	117	UG/L	B	5000	1
Chromium	7440-47-3	QCBLK192193-1	02/05/99	02/05/99	2.8	UG/L	U	10.0	1
Cobalt	7440-48-4	QCBLK192193-1	02/05/99	02/05/99	3.4	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK192193-1	02/05/99	02/05/99	3.0	UG/L	U	25.0	1
Iron	7439-89-6	QCBLK192193-1	02/05/99	02/05/99	61.1	UG/L	B	100	1
Magnesium	7439-95-4	QCBLK192193-1	02/05/99	02/05/99	62.0	UG/L	U	5000	1
Manganese	7439-96-5	QCBLK192193-1	02/05/99	02/05/99	0.80	UG/L	U	15.0	1
Nickel	7440-02-0	QCBLK192193-1	02/05/99	02/05/99	15.8	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK192193-1	02/05/99	02/05/99	2200	UG/L	U	5000	1
Silver	7440-22-4	QCBLK192193-1	02/05/99	02/05/99	5.5	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK192193-1	02/05/99	02/05/99	44.5	UG/L	U	5000	1
Vanadium	7440-62-2	QCBLK192193-1	02/05/99	02/05/99	3.3	UG/L	U	50.0	1
Zinc	7440-66-6	QCBLK192193-1	02/05/99	02/05/99	2.3	UG/L	U	20.0	1
Strontium	7440-24-6	QCBLK192193-1	02/05/99	02/05/99	2.6	UG/L	U	50.0	1

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO_____ Contract: 550.184___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W02640_____

SOW No.: SW846

EPA Sample No.	Lab Sample ID
_B0T1K3_____	_20347-001____
_B0T1K5_____	_20347-002____
_B0T1K5SD_____	_20347-002SD__
_B0T1K5S_____	_20347-002S___
_B0T131_____	_20400-003____
_B0T135_____	_20400-004____
_B0T144_____	_20400-001____
_B0T145_____	_20400-002____

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0T1K3

Lab Name: QUANTERRA MO Contract: 550.184

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02640

Matrix (soil/water): WATER Lab Sample ID: 20347-001

Level (low/med): LOW Date Received: 12/28/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	36.2	B		P
7440-36-0	Antimony	45.9	U		P
7440-39-3	Barium	58.0	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	70900			P
7440-47-3	Chromium	34.5			P
7440-48-4	Cobalt	3.4	U		P
7440-50-8	Copper	3.0	U		P
7439-89-6	Iron	85.3	B		P
7439-95-4	Magnesium	16100			P
7439-96-5	Manganese	10.1	B		P
7440-02-0	Nickel	15.8	U		P
7440-09-7	Potassium	3960	B		P
7440-22-4	Silver	5.5	U		P
7440-23-5	Sodium	13900			P
7440-62-2	Vanadium	11.4	B		P
7440-66-6	Zinc	288			P
7440-24-6	Strontium	368			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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SW-846

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0T1K5

Lab Name: QUANTERRA MO Contract: 550.184

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02640

Matrix (soil/water): WATER Lab Sample ID: 20347-002

Level (low/med): LOW Date Received: 12/28/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	37.8	B		P
7440-36-0	Antimony	45.9	U		P
7440-39-3	Barium	56.9	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	69600			P
7440-47-3	Chromium	37.1			P
7440-48-4	Cobalt	3.4	U		P
7440-50-8	Copper	4.0	B		P
7439-89-6	Iron	623			P
7439-95-4	Magnesium	15800			P
7439-96-5	Manganese	12.0	B		P
7440-02-0	Nickel	15.8	U		P
7440-09-7	Potassium	3570	B		P
7440-22-4	Silver	5.5	U		P
7440-23-5	Sodium	13700			P
7440-62-2	Vanadium	12.2	B		P
7440-66-6	Zinc	383			P
7440-24-6	Strontium	360			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0T131

Lab Name: QUANTERRA MO Contract: 550.184
Lab Code: ITMO Case No.: SAS No.: SDG No.: W02640
Matrix (soil/water): WATER Lab Sample ID: 20400-003
Level (low/med): LOW Date Received: 12/31/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18.7	U		P
7440-36-0	Antimony	45.9	U		P
7440-39-3	Barium	80.6	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	49300			P
7440-47-3	Chromium	37.0			P
7440-48-4	Cobalt	3.4	U		P
7440-50-8	Copper	3.5	B		P
7439-89-6	Iron	73.4	B		P
7439-95-4	Magnesium	11400			P
7439-96-5	Manganese	4.2	B		P
7440-02-0	Nickel	15.8	U		P
7440-09-7	Potassium	4720	B		P
7440-22-4	Silver	5.5	U		P
7440-23-5	Sodium	12500			P
7440-62-2	Vanadium	12.0	B		P
7440-66-6	Zinc	7.0	B		P
7440-24-6	Strontium	247			P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

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SW-846

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0T135

Lab Name: QUANTERRA_MO Contract: 550.184

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02640

Matrix (soil/water): WATER Lab Sample ID: 20400-004

Level (low/med): LOW Date Received: 12/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	32.4	B		P
7440-36-0	Antimony	45.9	U		P
7440-39-3	Barium	90.1	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	50700			P
7440-47-3	Chromium	44.5			P
7440-48-4	Cobalt	3.4	U		P
7440-50-8	Copper	3.0	U		P
7439-89-6	Iron	2100			P
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	72.8			P
7440-02-0	Nickel	15.8	U		P
7440-09-7	Potassium	4360	B		P
7440-22-4	Silver	5.5	U		P
7440-23-5	Sodium	12700			P
7440-62-2	Vanadium	15.3	B		P
7440-66-6	Zinc	9.6	B		P
7440-24-6	Strontium	253			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0T144

Lab Name: QUANTERRA_MO Contract: 550.184
Lab Code: ITMO Case No.: SAS No.: SDG No.: W02640
Matrix (soil/water): WATER Lab Sample ID: 20400-001
Level (low/med): LOW Date Received: 12/31/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	22.4	B		P
7440-36-0	Antimony	45.9	U		P
7440-39-3	Barium	103	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	83600			P
7440-47-3	Chromium	33.2			P
7440-48-4	Cobalt	3.4	U		P
7440-50-8	Copper	4.2	B		P
7439-89-6	Iron	44.4	B		P
7439-95-4	Magnesium	25700			P
7439-96-5	Manganese	2.9	B		P
7440-02-0	Nickel	15.8	U		P
7440-09-7	Potassium	5200			P
7440-22-4	Silver	5.5	U		P
7440-23-5	Sodium	15600			P
7440-62-2	Vanadium	11.4	B		P
7440-66-6	Zinc	18.6	B		P
7440-24-6	Strontium	586			P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0T145

Lab Name: QUANTERRA MO Contract: 550.184

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02640

Matrix (soil/water): WATER Lab Sample ID: 20400-002

Level (low/med): LOW Date Received: 12/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21.3	B		P
7440-36-0	Antimony	45.9	U		P
7440-39-3	Barium	100	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	80200			P
7440-47-3	Chromium	59.9			P
7440-48-4	Cobalt	3.4	U		P
7440-50-8	Copper	7.0	B		P
7439-89-6	Iron	212			P
7439-95-4	Magnesium	24600			P
7439-96-5	Manganese	5.6	B		P
7440-02-0	Nickel	17.2	B		P
7440-09-7	Potassium	4260	B		P
7440-22-4	Silver	5.5	U		P
7440-23-5	Sodium	14900			P
7440-62-2	Vanadium	9.1	B		P
7440-66-6	Zinc	14.3	B		P
7440-24-6	Strontium	566			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 150.184

Category: Anions
Method: EPA 300.0
Matrix: LIQUID

Client ID: B0T1K5

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Quanterra ID : 20347-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK189795-1	12/29/98	12/29/98	0.24	MG/L		0.10	1
Chloride	16887-00-6	QCBLK189795-1	12/29/98	12/29/98	25.9	MG/L		2.00	10
Nitrite	NO2-N	QCBLK189795-1	12/29/98	12/29/98	0.020	MG/L	U	0.020	1
Nitrate	NO3-N	QCBLK189795-1	12/29/98	12/29/98	11.3	MG/L		0.40	20
Sulfate	14808-79-8	QCBLK189795-1	12/29/98	12/29/98	99.6	MG/L		5.00	10

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: Anions
Method: EPA 300.0
Matrix: LIQUID

Client ID: B0T1K5

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Quanterra ID : 20347-002DUP

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK189795-1	12/29/98	12/29/98	0.26	MG/L		0.10	1
Chloride	16887-00-6	QCBLK189795-1	12/29/98	12/29/98	26.3	MG/L		2.00	10
Nitrite	NO2-N	QCBLK189795-1	12/29/98	12/29/98	0.020	MG/L	U	0.020	1
Nitrate	NO3-N	QCBLK189795-1	12/29/98	12/29/98	11.7	MG/L		0.40	20
Sulfate	14808-79-8	QCBLK189795-1	12/29/98	12/29/98	102	MG/L		5.00	10

Quanterra-Richland
1501 George Washington Way
Richland, WA 99352

Project: 550.184

Category: Anions
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 12/28/98
Receipt Date : 12/28/98
Report Date : 02/11/99

Client ID: B0T1K5

Quanterra ID : 20347-002MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK189795-1	12/29/98	12/29/98	96	%REC			1
Chloride	16887-00-6	QCBLK189795-1	12/29/98	12/29/98	93	%REC			20
Nitrite	NO2-N	QCBLK189795-1	12/29/98	12/29/98	118	%REC			10
Nitrate	NO3-N	QCBLK189795-1	12/29/98	12/29/98	95	%REC			20
Sulfate	14808-79-8	QCBLK189795-1	12/29/98	12/29/98	94	%REC			10

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: Anions
Method: EPA 300.0
Matrix: LIQUID

Client ID: B0T145

Sample Date : 12/30/98
Receipt Date : 12/31/98
Report Date : 02/11/99

Quanterra ID : 20400-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK189824-1	12/31/98	12/31/98	0.11	MG/L		0.10	1
Chloride	16887-00-6	QCBLK189824-1	12/31/98	12/31/98	17.0	MG/L		1.00	5
Nitrite	NO2-N	QCBLK189824-1	12/31/98	12/31/98	0.020	MG/L	U	0.020	1
Nitrate	NO3-N	QCBLK189824-1	12/31/98	12/31/98	20.6	MG/L		1.00	50
Sulfate	14808-79-8	QCBLK189824-1	12/31/98	12/31/98	148	MG/L		5.00	10

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.184

Category: Anions
Method: EPA 300.0
Matrix: LIQUID

Client ID: B0T135

Sample Date : 12/30/98
Receipt Date : 12/31/98
Report Date : 02/11/99

Quanterra ID : 20400-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK189824-1	12/31/98	12/31/98	0.20	MG/L		0.10	1
Chloride	16887-00-6	QCBLK189824-1	12/31/98	12/31/98	15.8	MG/L		1.00	5
Nitrite	NO2-N	QCBLK189824-1	12/31/98	12/31/98	0.020	MG/L	U	0.020	1
Nitrate	NO3-N	QCBLK189824-1	12/31/98	12/31/98	5.69	MG/L		0.20	10
Sulfate	14808-79-8	QCBLK189824-1	12/31/98	12/31/98	74.0	MG/L		2.50	5