START 9613453.1660

0044663 W093289 2

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CERTIFICATE OF ANALYSIS

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

April 18, 1996

Attention: Joan Kessner

JUN 1996 RECEIVED EDMC

APR 1996 RECEIVED Data Log In

Project number	:	550.65
Date Received by Lab	:	March 8, 1996
Number of Samples	:	Two (2)
Sample Type	:	Other
SDG Number	:	W0932
Data Deliverable	:	Summary

I. Introduction

On March 8, 1996, two (2) other samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client IDs:

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
10533-001	B0H697	60311801	Other	03/08/96
10533-002	B0H698	60311802	Other	03/08/96

II. 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.

00001A

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Analyses requested: Semivolatiles by EPA 8270. Volatiles by EPA 8240. ICAP metals by EPA 6010. Mercury by EPA method 7471. Arsenic by EPA method 7060. Lead by EPA method 7421. Selenium by EPA method 7740. Thallium by EPA method 7841. Chloride, Fluoride, Nitrite, Nitrate and Phosphate by EPA method 300.0. Nitrate/Nitrite by EPA method 353.1.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Matrix Spike Duplicate or Sample Duplicate analyses were performed per the protocol for each analyte.

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

V. Comments

Volatiles
There are no comments or nonconformances associated with this analysis.

Semivolatiles
There are no comments or nonconformances associated with this analysis.

Metals

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Percent solids was not determined for samples 10533-001 and 10533-002. Due to software configuration, the CLP forms list solid sample result units as " dry weight" and % solids as " 100 ". The results on the forms are actually mg/Kg as is and are not corrected for percent solids. The figure of 100 was used as percent solids for calculation purposes only and does not represent measured solids content of the samples.

The recoveries of the Matrix Spike and/or Matrix Spike Duplicate for the following list of elements were less than 80%, therefore all associated data was flagged with an " N ".

	%Rec MS	%Rec MSD
Mercury	40.4	36.4
Selenium	70.5	77.0
Antimony	42.0	52.3
Zinc	78.1	78.4
Thallium	82.2*	79.9

* Meets criteria , for reference only. See NCM #2613.

Wet Chemistry

The Relative Percent Difference could not be calculated due to the values being below the detection limits for the Fluoride, Phosphate, and Nitrite analyses.

The Matrix Spike recovery for the Fluoride, Chloride, Phosphate and Nitrite analysis was outside of the suggested limits of 75-125%.

The Matrix Spike recovery for the Nitrate analysis by EPA Method 300.0 was outside of the suggested limits of 75-125%, however the sample concentration was four times greater than the spike amount which makes the limits invalid.

Quanterra
Environmental Services

Bechtel Hanford Incorporated
April 18, 1996
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The Matrix Spike recovery for the Nitrate/Nitrite analysis by EPA method 353.1 was outside of the suggested limits of 75-125%, however the sample concentration was four times greater than the spike amount which makes the limits invalid.

I certify that this data 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:

Wade H. Price
Project Manager
e:\\price$\abbydave\hanw0932.nar

9613453.1664

LOG #: ~~2612~~ 2613 3-29-96

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

Project ID/Client: 550.65 W0932

NCM Initiated by/Date: K. CLAY 03-29-96 Project Manager: W. Price

Sample Numbers/QC batch or lot numbers: 10533-001, 001S, 001SD, 002

Tests: Hg/7471 Se/7740 ICP/6010 -Sb, Zn Tl/7841

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area): *To be completed by analyst*

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

- ☐ 1. Holding time expired in transit
- ☐ 2. Sample rec'd > 48 hrs after sampling. or ½ holding time has expired
- ☐ 3. Test added by client after expiration

Category II: Laboratory Dependent

- ☐ 4. Instrument failure
- ☐ 5. Analyst error
- ☐ 6. Log-in error
- ☐ 7. Miscommunication
- ☐ 8. Other (explanation 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 (explanation required) _____

Category V: Analysis Reruns (Dilution)

- ☐ 17. Over calibration
- ☐ 18. Under calibration
- ☐ 19. Other (explanation required) _____

Quality Assurance/Quality Control

- ☐ 20. QC data reported outside of controls
- ☐ 21. Incorrect procedure used
- ☐ 22. SOP intentionally modified with QA and tech approval
- ☐ 23. Invalid instrument calibration
- ☐ 24. Received insufficient sample for proper analysis

Incorrect or Incomplete Client Deliverable

- ☐ 25. Hardcopy deliverable error
- ☐ 26. Electronic deliverable error

Reported Detection Limits Elevated Due to:

- ☐ 27. Sample matrix: Does not include high analyte content
- ☐ 28. Insufficient sample volume
- ☐ 29. Other (explanation required)

Miscellaneous

- ☐ 30. Instrument/equipment Tag-out
- ☐ 31. Other (explanation required)

	%Rec MS	%Rec MSD	RPD
Hg	40.4	36.4	10.4
Se	70.5	77.0	8.8
Sb	42.0	52.3	21.8
Zn	78.1	78.4	0.4
Tl	82.2*	79.4	2.8

* meets crit for informational only

Notification (check appropriate area): ☐ Required ☐ Not Required *To be completed by project manager*

Client notified by (name and date): AJW 4-18-96

- ☑ In writing
- ☐ By telephone (call narrative)
- ☐ By facsimile
- ☐ Other (explain)

Client's name and response: _____

- ☐ Process "as is"
- ☐ Re-sample
- ☐ On hold until _____
- ☐ Other (explain)

Project manager (signature and date): Abigail Wade 4-18-96

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9613453.1665

QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: ~~2612~~ 2613 3-27-96

Corrective Action: *To be completed and reviewed by all associates involved*

Problem Description/Root Cause Author's initials and date: KRC 03-29-96

Low matrix spike & matrix spike duplicate recoveries
Matrix ~~of~~ interference
KRC
03-29-96

Corrective Actions (Short Term) Author's initials and date: KRC 03-29-96

None

Corrective Actions to Prevent Reoccurrence (Long Term)

None

Corrective Action approved by (Supervisor/Group Leader) and date: [signature] 3-29-96

Additional Comments:

Corrective Action to be completed by (if other than Supervisor/Group Leader):

Date Corrective Action is to be completed:

Quality Assurance Review *To be completed by a QA associate*

☒ Anomaly ☐ Deficiency ☐ Notified Ops/Sys Manager (Initials)

☐ Further action required:

Further action assigned to:

QA signature: [signature] Date: 3-29-96

Corrective Action Verification: *To be completed by a QA associate*

☐ Verification not required or requested

☐ Verified / CA completed on: by

☐ Cannot verify (specify reason)

Verified by: Date:

Nonconformance Memo Closure:

QA signature: Date:

The Office of Quality Assurance maintains a copy of this NCM indicating its final status.

00003

Quanterra March 12, 1996 10:18 am
Account: 10722 Project: 550.65 Quanterra-Richland QAS No. 892 Rev. 0
Master Sample Login: 10533

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: S. Fowler PM Review: Abby Nolo

Sample Header Template:

Sample No. / Comments / # / Data:	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
10533-001	B0H697	Solid	05-MAR-96 09:31	08-MAR-96 11:50	12-APR-96	FED-EX	3	Screening not Required
TREAT AS A SOIL/NOTE: RICHLAND ID 60311801, MATRIX=RESIN								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	10-APR-96	19-MAR-96	109V	(219317:100 219318:99 219319:98)
1	AW - Amber Glass-4oz	AS/7060/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)
3		BNA/8270/Q4	S	COLD	10-APR-96	19-MAR-96	TC7	(219325:92 219326:91 219327:90)
3		CL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219320:97 219321:96 219322:95)
3		FL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219320:97 219321:96 219322:95)
1		HG/7471/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219323:94)
1		ICAP/6010/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)
3		NO2/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
3		NO3/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
1		NO3/353.1/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219324:93)
3		OPHOS/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
1		PB/7421/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)
1		SE/7740/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)
1		TL/7841/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
10533-001DUP	B0H697	Solid	05-MAR-96 09:31	08-MAR-96 11:50	12-APR-96	FED-EX	3	Screening not Required
TREAT AS A SOIL/NOTE: RICHLAND ID 60311801, MATRIX=RESIN								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
3	AW - Amber Glass-4oz	CL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219320:97 219321:96 219322:95)
3		FL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219320:97 219321:96 219322:95)
3		NO2/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
3		NO3/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
1		NO3/353.1/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219324:93)
3		OPHOS/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
10533-001MS	B0H697	Solid	05-MAR-96 09:31	08-MAR-96 11:50	12-APR-96	FED-EX	3	Screening not Required
TREAT AS A SOIL/NOTE: RICHLAND ID 60311801, MATRIX=RESIN								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	10-APR-96	19-MAR-96	109V	(219317:100 219318:99 219319:98)
1	AW - Amber Glass-4oz	AS/7060/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)
3		BNA/8270/Q4	S	COLD	10-APR-96	19-MAR-96	TC7	(219325:92 219326:91 219327:90)
3		CL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219320:97 219321:96 219322:95)
3		FL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219320:97 219321:96 219322:95)
1		HG/7471/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219323:94)
1		ICAP/6010/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)
3		NO2/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
3		NO3/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
1		NO3/353.1/Q4	S	COLD	10-APR-96	02-APR-96	TC7	(219324:93)
3		OPHOS/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7	(219320:97 219321:96 219322:95)
1		PB/7421/Q4	S	COLD	10-APR-96	01-SEP-96	TC7	(219323:94)

3*=Sample has not been rad screened.

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Quanterra March 12, 1996 10:18 am
Account: 10722 Project: 550.65 Quanterra-Richland QAS No. 892 Rev. 0
Master Sample Login: 10533

Project Manager: W. Price

Draft: Final: Entered and Reviewed by:_____ PM Review:_____

Sample Header Template: _____

Sample No. / Comments / # / Data:	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category	Rad Sample No. (Container Numbers:% Filled)
1		SE/7740/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
1		TL/7841/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
10533-001MSD	BOH697	Solid	05-MAR-96 09:31	08-MAR-96 11:50	12-APR-96	FED-EX		3	Screening not Required
TREAT AS A SOIL/NOTE: RICHLAND ID 60311801, MATRIX=RESIN									
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	10-APR-96	19-MAR-96	109V		(219317:100 219318:99 219319:98)
1	AW - Amber Glass-4oz	AS/7060/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
3		BNA/8270/Q4	S	COLD	10-APR-96	19-MAR-96	TC7		(219325:92 219326:91 219327:90)
1		HG/7471/Q4	S	COLD	10-APR-96	02-APR-96	TC7		(219323:94)
1		ICAP/6010/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
1		PB/7421/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
1		SE/7740/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
1		TL/7841/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219323:94)
10533-002	BOH698	Solid	05-MAR-96 10:20	08-MAR-96 11:50	12-APR-96	FED-EX		3	Screening not Required
TREAT AS A SOIL/NOTE: RICHLAND ID 60311802, MATRIX=RESIN									
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	10-APR-96	19-MAR-96	109V		(219346:100 219347:99 219348:98)
1	AW - Amber Glass-4oz	AS/7060/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219352:94)
3		BNA/8270/Q4	S	COLD	10-APR-96	19-MAR-96	TC7		(219354:92 219355:91 219356:90)
3		CL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7		(219349:97 219350:96 219351:95)
3		FL/300.0/Q4	S	COLD	10-APR-96	02-APR-96	TC7		(219349:97 219350:96 219351:95)
1		HG/7471/Q4	S	COLD	10-APR-96	02-APR-96	TC7		(219352:94)
1		ICAP/6010/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219352:94)
3		NO2/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7		(219349:97 219350:96 219351:95)
3		NO3/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7		(219349:97 219350:96 219351:95)
1		NO3/353.1/Q4	S	COLD	10-APR-96	02-APR-96	TC7		(219353:93)
3		OPHOS/300.0/Q4	S	COLD	10-APR-96	07-MAR-96	TC7		(219349:97 219350:96 219351:95)
1		PB/7421/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219352:94)
1		SE/7740/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219352:94)
1		TL/7841/Q4	S	COLD	10-APR-96	01-SEP-96	TC7		(219352:94)

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3*=Sample has not been rad screened.

Chain of Custody Record

To: St Louis

Quanterra Environmental Services

QUA-4124-1

Client	Project Manager	Date	Chain Of Custody Number
Bechtel Hanford	Van Pettey	3-8-96	54267
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1

City	State	Zip Code	Site Contact	Lab Contact

Project Name: SAF B96-030

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.:

Analysis (Attach list if more space is needed): SEE COC

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH
60311801 BOH697 ↓ 2 ↓ 698	SEE	COC										

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☑ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other _____

QC Requirements (Specify): SDG-W0932

Relinquished By	Date	Time	Received By	Date	Time
1. Heidelberg Quanterra	3-8-96	16:00	1. Dave W Byrd	3-9-96	08:40
2.			2.		
3.			3.		

Comments:

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

90000

9913459.1668

Dave Tor 01-OCT-96

TC 7 109V

Bechtel Hanford, Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1

Data Turnaround: ☐ Priority ■ Normal

Collector: Bob Fahlberg / David St. John	Company Contact: F. W. Gustafson	Telephone: (509) 372-9372
Project Designation: 200-UP-1 Pump and Treat - Spent Resin (1996)	Sampling Location: 200-UP-1 Pump and Treat	SAF No.: B96-030
Ice Chest No.: GWS-055	Field Logbook No.	Method of Shipment: Hand Delivered
Shipped To: Quanterra	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA
Possible Sample Hazards/Remarks: < .5 mrem/hr Dose		
Special Handling and/or Storage: Maintain samples between 2°C and 6°C.		

SAMPLE ANALYSIS: 603118 SDG W0932

Sample No.	Matrix*	Date Sampled	Time Sampled	ICP Metals - TAL. AA Metals - As, Pb, Se, Tl, Hg.	VOA - TCL *1	Semi-VOA - TCL	Anions - F, Cl, PO_4, NO_2, NO_3	NO_2 - NO_3	*2 603119	Activity Scan			
Preservation				Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	None	None			
Type of Container				P/G	Gs	aG	G	P/G	P/G	P			
No. of Container(s)				1	3	3	3	1	2	1			
Volume				60mL	40mL	60mL	60mL	60mL	1L	20mL			
B0H697 01	X	03-05-96	0931	X	X	X	X	X	X	X			
B0H698 02	X	03-05-96	1020	X	X	X	X	X	X	X			
				100%	100%	100%	100%	100%					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 13:05 3/5/96	Received By: B. Whitten	Date/Time: 1305 3-5-96
Relinquished By: B. Whitten	Date/Time: 1150 3-8-96	Received By: R. Boyd Porter	Date/Time: 3-8-96 1150
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1 Due to sample matrix, zero headspace will not be obtained.

*2 Gross Alpha, Gross Beta, Tc-99, Total Uranium, Gamma Spec.

Sample Matrix - ion exchange resin.

Sample analysis for PO_4, NO_2, and NO_3 by EPA 300.0 is being requested for information only. The ERC Contractor acknowledges that the 48 hour hold time will not be met.

For VOA and semi-VOA analysis, the resin should be treated as a soil.

Matrix*
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

9613453.1669

000007

Client Sample Screening Results

08-Mar-96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0G544		3/8/96 12:00:00 PM	QUAD21A	3/8/96 2:56:19 PM	B0G544	30	93	3.03	1053	34.15
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	56	0.07	760	0.95

Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp;	(Dpm/ 8.75E+00	(uCi/ 3.94E-04	(pCi/ 3.94E+02	± 4.6E+01	CAT I	6.3E-02	Lab
Ppt mg: 8.1	Units: L	, ml	Bet;	Alq): 6.77E+01	Sa): 3.05E-03	L|g): 3.05E+03	± 9.7E+01		1.6E-02	Alq L|g

BHI B0G545		3/8/96 11:00:00 AM	QUAD21B	3/8/96 2:56:19 PM	B0G545	30	25	0.78958333	265	7.9795833
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	35	0.04375	683	0.85375

Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00	, 1.00E+01	Alp;	(Dpm/ 2.44E+00	(uCi/ 2.20E-04	(pCi/ 1.10E+02	± 3.0E+01	CAT I	2.3E-01	Lab
Ppt mg: 8	Units: L	, ml	Bet;	Alq): 1.52E+01	Sa): 1.37E-03	L|g): 6.85E+02	± 4.7E+01		7.3E-02	Alq L|g

BHI B0H656		3/8/96 11:00:00 AM	QUAD21C	3/8/96 2:56:19 PM	B0H656	30	16	0.48458333	838	27.088333
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	39	0.04875	676	0.845

Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00	, 1.00E+01	Alp;	(Dpm/ 6.23E-01	(uCi/ 5.61E-05	(pCi/ 2.81E+01	± 2.0E+01	CAT I	8.9E-01	Lab
Ppt mg: 0.7	Units: L	, ml	Bet;	Alq): 5.29E+01	Sa): 4.77E-03	L|g): 2.38E+03	± 8.5E+01		2.1E-02	Alq L|g

BHI B0H657		3/8/96 11:00:00 AM	QUAD21D	3/8/96 2:56:19 PM	B0H657	30	12	0.345	57	1.0375
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	44	0.055	690	0.8625

Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00	, 1.00E+01	Alp;	(Dpm/ 1.04E+00	(uCi/ 9.35E-05	(pCi/ 4.67E+01	± 2.3E+01	CAT I	5.3E-01	Lab
Ppt mg: 0.7	Units: L	, ml	Bet;	Alq): 1.84E+00	Sa): 1.66E-04	L|g): 8.28E+01	± 2.2E+01		6.0E-01	Alq L|g

BHI B0H697		3/8/96 11:00:00 AM	QUAD22A	3/8/96 2:56:23 PM	B0H697	30	1029	34.25125	23814	792.86875
	SOLID		Bkg:	3/8/96 4:52:37 AM	BKG	800	39	0.04875	745	0.93125

Anl Date: 3/8/96	Tot Sa, Alq: 1.48E+03	, 5.34E+01	Alp;	(Dpm/ 1.36E+02	(uCi/ 1.70E+00	(pCi/ 1.15E+03	± 3.7E+01	CAT III	4.4E-02	Lab
Ppt mg: 53.4	Units: g	, mg	Bet;	Alq): 1.60E+03	Sa): 2.00E+01	L|g): 1.35E+04	± 8.8E+01		7.4E-03	Alq L|g

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CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H698		3/8/96 11:00:00 AM	QUAD22B	3/8/96 2:56:23 PM	B0H698	30	424	14.0795833	16247	540.68417
	SOLID		Bkg:	3/8/96 4:52:37 AM	BKG	800	43	0.05375	706	0.8825
Anl Date: 3/8/96	Tot Sa, Alq: 1.50E+03	, 6.47E+01	Alp; (Dpm/ 4.85E+01	(uCi/ 5.07E-01	(pCi/ 3.38E+02	± 1.9E+01	CAT III	1.5E-01	Lab	
Ppt mg: 64.7	Units: g	, mg	Bet; Alq): 1.12E+03	Sa): 1.17E+01	L|g): 7.78E+03	± 6.1E+01		1.3E-02	Alq L|g	
BHI B0H773		3/8/96 11:00:00 AM	QUAD22C	3/8/96 2:56:23 PM	B0H773	30	18	0.55125	68	1.4116667
	LIQUID		Bkg:	3/8/96 4:52:37 AM	BKG	800	39	0.04875	684	0.855
Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp; (Dpm/ 1.65E+00	(uCi/ 7.43E-05	(pCi/ 7.43E+01	± 2.4E+01	CAT I	3.4E-01	Lab	
Ppt mg: 3.4	Units: L	, ml	Bet; Alq): 2.31E+00	Sa): 1.04E-04	L|g): 1.04E+02	± 2.2E+01		4.8E-01	Alq L|g	
BHI B0H774		3/8/96 11:00:00 AM	QUAD22D	3/8/96 2:56:23 PM	B0H774	30	9	0.24125	47	0.6416667
	LIQUID		Bkg:	3/8/96 4:52:37 AM	BKG	800	47	0.05875	740	0.925
Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp; (Dpm/ 7.11E-01	(uCi/ 3.20E-05	(pCi/ 3.20E+01	± 2.2E+01	CAT I	7.8E-01	Lab	
Ppt mg: 1.4	Units: L	, ml	Bet; Alq): 1.06E+00	Sa): 4.79E-05	L|g): 4.79E+01	± 1.9E+01		1.0E+00	Alq L|g	
BHI B0H776		3/8/96 11:00:00 AM	QUAD23A	3/8/96 2:56:32 PM	B0H776	30	102	3.355	4993	165.47333
	LIQUID		Bkg:	3/8/96 4:52:46 AM	BKG	800	36	0.045	768	0.96
Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp; (Dpm/ 6.66E+00	(uCi/ 3.00E-04	(pCi/ 3.00E+02	± 3.9E+01	CAT I	8.3E-02	Lab	
Ppt mg: 8.4	Units: L	, ml	Bet; Alq): 3.17E+02	Sa): 1.43E-02	L|g): 1.43E+04	± 2.0E+02		3.5E-03	Alq L|g	

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Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/8/96 1150 Client Name BHI

Project/Client # B96030 Batch or Case # _____

Cooler ID (if noted on outside of cooler) GW5055

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes [✓] No [ ]
3. Custody Seals dated and signed? Yes [✓] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [ ] No [✓]
5. Vermiculite/packing material is: Wet [✓] Dry [ ] _____
6. Each sample is in a plastic bag? Yes [✓] No [ ] _____
7. Number of sample containers in cooler: 28
8. Samples have:
   - ____ tape
   - ✓ hazard labels
   - ✓ custody seals
   - ✓ appropriate sample labels
9. Samples are:
   - ✓ in good condition
   - ____ leaking
   - ____ broken
   - ____ have air bubbles
   - ____ other
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    - Chain of Custody #(s) N/A
    - Request for Analysis #(s) _____
    - Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes [ ] No [✓]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature R. Boyd R. Boyd Date/Time 3/8/96 1150

9613453.1673

RECEIVED BY R. Boyd Oster 3/8/96 1150

RADIOACTIVE SHIPMENT RECORD

3. Page 1 of 1 — 34755

1. SHIP TO
Company: QUANTERRA
Address: 2800 GEORGE WASHINGTON WAY
City, State, Zip: RICHLAND WA 99352
Attention: KAREN ACTENBURGH
Phone: 375-3131 EXT 135

2. SHIP FROM U.S. DEPT. OF ENERGY C/O
Company: BHI HANFORD
Address: 4701-C 4100 AREA
City, State, Zip: RICHLAND WA 99352
Contact: BILL WHITTEN
Phone: 376-1878

4. Ship [X] Prepaid [ ] Collect
Via: [X] Motor-~~Rail~~ [ ] Air Psgr [ ] Excl. Use [ ] Air Cargo [ ] UPS Surface [ ] Mail [X] Site Carrier
SHIPMENT AUTHORIZATION NUMBER:

5. HM Proper Shipping Name: Radioactive Material,

	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	(other)		

6. Markings Applied: Package Orientation [ ]; Gross Weight [X]; Radioactive - LSA [ ]; Type A [ ]; Type B [ ]

7. For Normal Form Identify
Physical Form: [ ] Liquid [ ] Gas [X] Solid
Chemical Form: [ ] Metal [ ] Oxide [X] Elemental [ ] Nitrate [ ] Mixture
Other:

8. Additional RAM Desc.: Limited Quantity Radioactive Material [X]; Highway Route Controlled Quantity [ ]

9. Placards Applied [ ] Yes [X] No
If Rail Specify Placards
Route Plan [ ] Yes [X] No

11a. TYPE PACKAGE: Strong Tight [X]; Type A [ ]; Type B [ ]; Type B(U) [ ]; Type B(M) [ ]

11b. CONSTRUCTION: [ ] Box, FB; [ ] Wood; [ ] Steel; [ ] Drum; [ ] Cask; Other POLYCOOLER

11c. FISSILE CLASS: Non-Fissile [ ]; Fissile Exempt [X]; Fissile I [ ]; Fissile II [ ]; Fissile III [ ]; Gms Fissile < 15gms

11d. Labels Applied: Empty [ ]; Radioactive White I [ ]; Radioactive Yellow II [ ]; Radioactive Yellow III [ ]; Subsidiary Hazard [ ]

10. EMERGENCY RESPONSE
Telephone: (509) 373-3800
Emergency Response Guide(s): #61

Warning -- Fissile Class III Shipment. Do Not Load More Than NA *Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.*

12.

No. Pkgs.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Curies/Pkg	Gr. Wt.
1	STRONG TIGHT	N/A	N/A	N/A	Tc99 U238 U235	N/A	10.7uCi	41lbs
POLYCOOLER #GWS055 CONTAINS SAMPLES OF SPENT RESIN IN GLASS JARS. THE JARS ARE PACKED ON WET ICE AND VERMICULITE # BOH697 BOH698								
					TOTALS	N/A	10.7uCi	41lbs

(Shipper may describe package in detail on one of the unused lines above)

13. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.
Certifier's Signature: Judy Thompson On Behalf of DOE-RL — Date: 3/8/96 — Organization: FIELD SAMPLING — Complete Cost Code (Inc. End Function): X60126

14. Surface Dose Rate of Package: [X] <0.5 or ____ mrem/hr (N+β γ)
Dose Rate at 1 Meter from Surface of Package: [X] <0.5 or ____ mrem/hr (N+β γ)
Smears of Outer Container: [X] <22 dpm β γ/cm²; [X] <2.2 dpm α /cm²; [X] <Tbl. 2-2 HSRCM Onsite Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <200 mrem/hr (N+β γ); @ 6 feet [X] <10 mrem/hr (N+β γ); @ Cab or sleeper [X] <2 mrem/hr (N+β γ)
Additional Data and Instructions (inc. Readings on Internal Packaging)
Signature - Radiation Monitoring: [signature] — Bldg. 4701-C — Survey No. I-200-1134 — Date 3-8-96

15. PICKUP OF SHIPMENT — Vehicle: ID2598 — Driver: B.T. WHITTEN — RECEIPT Signature: Bill Whitten — Date 3-8-96

16. Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: M.A. Sams — Printed Name: M.A. SAMS — Date 3-8-96

17. AIR TRANSPORT CERTIFICATION
CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: [ ] 1. Ltd Qty [ ] 2. <3 T.I. [ ] 3. Research/Medical Diagnosis [ ] 4. Human Medical Research
Pkg. Dimensions: NA

18. OFFSITE AUTHORIZATION
B/L: RMW-9876 — Date Shipped: 3-8-96 — Routing: SITE — ETA: 3-8-96
Surveyed By: ____ — Date: ____ — Approved for Shipment Offsite: M.A. Sams — Date: 3-8-96

54-6000-088 (07/95)

☆ U.S. GOVERNMENT PRINTING OFFICE: 1995—693-181/21013

GUIDE 6

POTENTIAL HAZARDS

HEALTH HAZARDS

Low-level radioactive material; little personal radiation hazard.
Many packages are not required to have radioactive materials labels or markings.
Some radioactive materials cannot be detected by commonly available instruments.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.
Radioactivity does not change flammability or other properties of the materia

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Response actions may be performed prior to any radiation measurements.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Notify Radiation Authority of accident conditions.
Detain uninjured persons, isolate equipment with suspected contamination, and delay cleanup until instruction of Radiation Authority.

FIRE

Do not move damaged containers; move undamaged containers out of fire zone.
Small Fires: Dry chemical, CO_2, water spray or regular foam.
Large Fires: Water spray, fog (flooding amounts).

SPILL OR LEAK

Do not touch damaged containers or spilled material.
Small Liquid Spills: Take up with sand, earth or other noncombustible absorbent material.
Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

Use first aid treatment according to the nature of the injury.
Advise medical personnel that victim may be contaminated with low-level radioactive material.

Radioactive Material, excepted package - limited quantity of material, 7, UN2910

THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.421 FOR RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-LIMITED QUANITITY OF MATERIAL, UN2910

BECHTEL HANFORD INC.

SAMPLE STATUS REPORT FOR N 6264. RAD SCREEN BOH698 TIME: 3/ 6/96 8:44
DISPATCHED: 3/ 4/96 12:51 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/ 5/96 11:55

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
4271	TOT-ACT	2.43000E 03 pCi/G	N	Y	X60618

END OF REPORT

2620 mL ≈ 2620 g FOR RESIN

$$\frac{2430 \times 10^{-12}\ \text{ci}}{g} \times 2620\,g = .63666 \times 10^{-5}\ \text{ci}$$

$$6.3666 \times 10^{-6}\ \text{ci}$$

$$\simeq 6.4\ \mu\text{Ci}$$

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SAMPLE STATUS REPORT FOR N 6263. RAD SCREEN BOH697 TIME: 3/ 6/96 8:44
DISPATCHED: 3/ 4/96 12:51 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/ 5/96 11:55

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
4271	TOT-ACT	1.66000E 03 pCi/G	N	Y	X60618

END OF REPORT

2620 ml ≈ 2620 g Resin

$$\frac{1660 \times 10^{-12}\ \text{ci}}{\text{g}} \times 2620\ \text{g} = .43492 \times 10^{-5}\ \text{ci}$$

4.3492×10^{-6} ci

= 4.3 uci

total = 10.7 uci

9613453.1678

QC

Quanterra
Environmental Services

OPENED BW/WP
DATE 3-9-96
TIME
BY BWB

Login No.: 10533

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 3-9-96 Time: 0840
Project No: 550.65
Initiated by: George W Byrd
Shipper/No: 236-9452-522
RFA/COC Numbers: H54267

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: 5°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) George W Byrd Date: 3-9-96

Project Management Review: Abby Watt Date: 3-11-96

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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

9613453.1679

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Client ID: BOH697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK94451-1	03/18/96	03/18/96	20	UG/KG	U	20	2
Bromomethane	74-83-9	QCBLK94451-1	03/18/96	03/18/96	20	UG/KG	U	20	2
Vinyl Chloride	75-01-4	QCBLK94451-1	03/18/96	03/18/96	20	UG/KG	U	20	2
Chloroethane	75-00-3	QCBLK94451-1	03/18/96	03/18/96	20	UG/KG	U	20	2
Methylene Chloride	75-09-2	QCBLK94451-1	03/18/96	03/18/96	27	UG/KG	B	10	2
Acetone	67-64-1	QCBLK94451-1	03/18/96	03/18/96	44	UG/KG	B	40	2
Carbon Disulfide	75-15-0	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
1,1-Dichloroethene	75-35-4	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
1,1-Dichloroethane	75-34-3	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
1,2-Dichloroethene (total)	540-59-0	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Chloroform	67-66-3	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG		10	2
1,2-Dichloroethane	107-06-2	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
2-Butanone	78-93-3	QCBLK94451-1	03/18/96	03/18/96	40	UG/KG	U	40	2
1,1,1-Trichloroethane	71-55-6	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Carbon Tetrachloride	56-23-5	QCBLK94451-1	03/18/96	03/18/96	160	UG/KG		10	2
Bromodichloromethane	75-27-4	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
1,2-Dichloropropane	78-87-5	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
cis-1,3-Dichloropropene	10061-01-5	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Trichloroethene	79-01-6	QCBLK94451-1	03/18/96	03/18/96	11	UG/KG		10	2
Dibromochloromethane	124-48-1	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
1,1,2-Trichloroethane	79-00-5	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Benzene	71-43-2	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
trans-1,3-Dichloropropene	10061-02-6	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Bromoform	75-25-2	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
4-Methyl-2-Pentanone	108-10-1	QCBLK94451-1	03/18/96	03/18/96	40	UG/KG	U	40	2
2-Hexanone	591-78-6	QCBLK94451-1	03/18/96	03/18/96	40	UG/KG	U	40	2
Tetrachloroethene	127-18-4	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Toluene	108-88-3	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Chlorobenzene	108-90-7	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
EthylBenzene	100-41-4	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Styrene	100-42-5	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Xylene (total)	1330-20-7	QCBLK94451-1	03/18/96	03/18/96	10	UG/KG	U	10	2
Toluene-d8 (SURR)	2037-26-5	QCBLK94451-1	03/18/96	03/18/96	97	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK94451-1	03/18/96	03/18/96	90	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94451-1	03/18/96	03/18/96	108	%REC			2

9613453.1680

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Client ID: B0H697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK94451-1	03/18/96	03/18/96	168	%REC			2
Trichloroethene	79-01-6	QCBLK94451-1	03/18/96	03/18/96	113	%REC			2
Benzene	71-43-2	QCBLK94451-1	03/18/96	03/18/96	100	%REC			2
Toluene	108-88-3	QCBLK94451-1	03/18/96	03/18/96	87	%REC			2
Chlorobenzene	108-90-7	QCBLK94451-1	03/18/96	03/18/96	103	%REC			2
Toluene-d8 (SURR)	2037-26-5	QCBLK94451-1	03/18/96	03/18/96	95	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK94451-1	03/18/96	03/18/96	80	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94451-1	03/18/96	03/18/96	98	%REC			2

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Client ID: B0H697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK94451-1	03/18/96	03/18/96	167	%REC			2
Trichloroethene	79-01-6	QCBLK94451-1	03/18/96	03/18/96	114	%REC			2
Benzene	71-43-2	QCBLK94451-1	03/18/96	03/18/96	107	%REC			2
Toluene	108-88-3	QCBLK94451-1	03/18/96	03/18/96	98	%REC			2
Chlorobenzene	108-90-7	QCBLK94451-1	03/18/96	03/18/96	107	%REC			2
Toluene-d8 (SURR)	2037-26-5	QCBLK94451-1	03/18/96	03/18/96	101	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK94451-1	03/18/96	03/18/96	90	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94451-1	03/18/96	03/18/96	111	%REC			2

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Client ID: BOH698

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK94451-1	03/18/96	03/18/96	25	UG/KG	U	25	2.5
Bromomethane	74-83-9	QCBLK94451-1	03/18/96	03/18/96	25	UG/KG	U	25	2.5
Vinyl Chloride	75-01-4	QCBLK94451-1	03/18/96	03/18/96	25	UG/KG	U	25	2.5
Chloroethane	75-00-3	QCBLK94451-1	03/18/96	03/18/96	25	UG/KG	U	25	2.5
Methylene Chloride	75-09-2	QCBLK94451-1	03/18/96	03/18/96	30	UG/KG	B	12	2.5
Acetone	67-64-1	QCBLK94451-1	03/18/96	03/18/96	50	UG/KG	B	50	2.5
Carbon Disulfide	75-15-0	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
1,1-Dichloroethene	75-35-4	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
1,1-Dichloroethane	75-34-3	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
1,2-Dichloroethene (total)	540-59-0	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Chloroform	67-66-3	QCBLK94451-1	03/18/96	03/18/96	15	UG/KG		12	2.5
1,2-Dichloroethane	107-06-2	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
2-Butanone	78-93-3	QCBLK94451-1	03/18/96	03/18/96	50	UG/KG	U	50	2.5
1,1,1-Trichloroethane	71-55-6	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Carbon Tetrachloride	56-23-5	QCBLK94451-1	03/18/96	03/18/96	210	UG/KG		12	2.5
Bromodichloromethane	75-27-4	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
1,2-Dichloropropane	78-87-5	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
cis-1,3-Dichloropropene	10061-01-5	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Trichloroethene	79-01-6	QCBLK94451-1	03/18/96	03/18/96	15	UG/KG		12	2.5
Dibromochloromethane	124-48-1	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
1,1,2-Trichloroethane	79-00-5	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Benzene	71-43-2	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
trans-1,3-Dichloropropene	10061-02-6	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Bromoform	75-25-2	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
4-Methyl-2-Pentanone	108-10-1	QCBLK94451-1	03/18/96	03/18/96	50	UG/KG	U	50	2.5
2-Hexanone	591-78-6	QCBLK94451-1	03/18/96	03/18/96	50	UG/KG	U	50	2.5
Tetrachloroethene	127-18-4	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Toluene	108-88-3	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Chlorobenzene	108-90-7	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
EthylBenzene	100-41-4	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Styrene	100-42-5	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Xylene (total)	1330-20-7	QCBLK94451-1	03/18/96	03/18/96	12	UG/KG	U	12	2.5
Toluene-d8 (SURR)	2037-26-5	QCBLK94451-1	03/18/96	03/18/96	97	%REC			2.5
Bromofluorobenzene (SURR)	460-00-4	QCBLK94451-1	03/18/96	03/18/96	89	%REC			2.5
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94451-1	03/18/96	03/18/96	106	%REC			2.5

9613453.1683

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H697

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V53301 SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-001

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7855

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. Date Analyzed: 03/18/96

Column: (pack/cap) CAP Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	27	B
67-64-1	Acetone	44	B
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	40	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	160	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	11	
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	40	U
591-78-6	2-Hexanone	40	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H697

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V53301 SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-001

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7855

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. Date Analyzed: 03/18/96

Column (pack/cap) CAP Dilution Factor: 2.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9613453.1685

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H698

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V53301 SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-002

Sample wt/vol: 2.00 (g/mL) G Lab File ID: B7859

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. Date Analyzed: 03/18/96

Column: (pack/cap) CAP Dilution Factor: 2.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	25	U
74-83-9	Bromomethane	25	U
75-01-4	Vinyl Chloride	25	U
75-00-3	Chloroethane	25	U
75-09-2	Methylene Chloride	30	B
67-64-1	Acetone	50	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	15	
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	50	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	210	
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	15	
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

9613453.1686

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H698

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V53301 SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-002

Sample wt/vol: 2.00 (g/mL) G Lab File ID: B7859

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. Date Analyzed: 03/18/96

Column (pack/cap) CAP Dilution Factor: 2.5

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: BOH697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
bis(2-Chloroethyl)Ether	111-44-4	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2-Chlorophenol	95-57-8	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
1,3-Dichlorobenzene	541-73-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
1,4-Dichlorobenzene	106-46-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
1,2-Dichlorobenzene	95-50-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2-Methylphenol	95-48-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
bis(2-Chloroisopropyl)Ether	108-60-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
4-Methylphenol	106-44-5	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
N-nitroso-di-n-propylamine	621-64-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Hexachloroethane	67-72-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Nitrobenzene	98-95-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Isophorone	78-59-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2-Nitrophenol	88-75-5	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2,4-Dimethylphenol	105-67-9	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2,4-Dichlorophenol	120-83-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
1,2,4-Trichlorobenzene	120-82-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Naphthalene	91-20-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
4-Chloroaniline	106-47-8	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Hexachlorobutadiene	87-68-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
4-Chloro-3-Methylphenol	59-50-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2-Methylnaphthalene	91-57-6	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Hexachlorocyclopentadiene	77-47-4	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
2,4,6-Trichlorophenol	88-06-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2,4,5-Trichlorophenol	95-95-4	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2-Chloronaphthalene	91-58-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2-Nitroaniline	88-74-4	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
DimethylPhthalate	131-11-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Acenaphthylene	208-96-8	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2,6-Dinitrotoluene	606-20-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
3-Nitroaniline	99-09-2	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
Acenaphthene	83-32-9	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2,4-Dinitrophenol	51-28-5	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
4-Nitrophenol	100-02-7	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
Dibenzofuran	132-64-9	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
2,4-Dinitrotoluene	121-14-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Diethylphthalate	84-66-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Fluorene	86-73-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
4-Nitroaniline	100-01-6	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
n-Nitrosodiphenylamine	86-30-6	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Hexachlorobenzene	118-74-1	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Pentachlorophenol	87-86-5	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
Phenanthrene	85-01-8	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Anthracene	120-12-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Carbazole	86-74-8	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Di-N-Butylphthalate	84-74-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Fluoranthene	206-44-0	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Pyrene	129-00-0	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
ButylBenzylPhthalate	85-68-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
3,3'-Dichlorobenzidine	91-94-1	QCBLK93974-1	03/13/96	03/19/96	20000	UG/KG	U	20000	1
Benzo(a)Anthracene	56-55-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Chrysene	218-01-9	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
di-N-OctylPhthalate	117-84-0	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Benzo(b)Fluoranthene	205-99-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Benzo(k)Fluoranthene	207-08-9	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Benzo(a)Pyrene	50-32-8	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: B0H697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK93974-1	03/13/96	03/19/96	4100	UG/KG	U	4100	1
Unknown-1	TIC-32	QCBLK93974-1	03/13/96	03/19/96	4300	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK93974-1	03/13/96	03/19/96	1100	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK93974-1	03/13/96	03/19/96	2400	UG/KG	BJ		1
Unknown-4	TIC-35	QCBLK93974-1	03/13/96	03/19/96	1700	UG/KG	BJ		1
Nitrobenzene-d5	4165-60-0	QCBLK93974-1	03/13/96	03/19/96	61	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK93974-1	03/13/96	03/19/96	54	%REC			1
Terphenyl-d14	1718-51-0	QCBLK93974-1	03/13/96	03/19/96	72	%REC			1
Phenol-d5	13127-88-3	QCBLK93974-1	03/13/96	03/19/96	71	%REC			1
2-Fluorophenol	367-12-4	QCBLK93974-1	03/13/96	03/19/96	63	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK93974-1	03/13/96	03/19/96	37	%REC			1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: BOH697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK93974-1	03/13/96	03/19/96	73	%REC			1
2-Chlorophenol	95-57-8	QCBLK93974-1	03/13/96	03/19/96	70	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK93974-1	03/13/96	03/19/96	66	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK93974-1	03/13/96	03/19/96	62	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK93974-1	03/13/96	03/19/96	72	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK93974-1	03/13/96	03/19/96	75	%REC			1
Acenaphthene	83-32-9	QCBLK93974-1	03/13/96	03/19/96	58	%REC			1
4-Nitrophenol	100-02-7	QCBLK93974-1	03/13/96	03/19/96	37	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK93974-1	03/13/96	03/19/96	67	%REC			1
Pentachlorophenol	87-86-5	QCBLK93974-1	03/13/96	03/19/96	37	%REC			1
Pyrene	129-00-0	QCBLK93974-1	03/13/96	03/19/96	64	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK93974-1	03/13/96	03/19/96	72	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK93974-1	03/13/96	03/19/96	63	%REC			1
Terphenyl-d14	1718-51-0	QCBLK93974-1	03/13/96	03/19/96	75	%REC			1
Phenol-d5	13127-88-3	QCBLK93974-1	03/13/96	03/19/96	83	%REC			1
2-Fluorophenol	367-12-4	QCBLK93974-1	03/13/96	03/19/96	75	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK93974-1	03/13/96	03/19/96	44	%REC			1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: B0H697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK93974-1	03/13/96	03/19/96	75	%REC			1
2-Chlorophenol	95-57-8	QCBLK93974-1	03/13/96	03/19/96	74	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK93974-1	03/13/96	03/19/96	70	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK93974-1	03/13/96	03/19/96	69	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK93974-1	03/13/96	03/19/96	80	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK93974-1	03/13/96	03/19/96	80	%REC			1
Acenaphthene	83-32-9	QCBLK93974-1	03/13/96	03/19/96	63	%REC			1
4-Nitrophenol	100-02-7	QCBLK93974-1	03/13/96	03/19/96	40	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK93974-1	03/13/96	03/19/96	73	%REC			1
Pentachlorophenol	87-86-5	QCBLK93974-1	03/13/96	03/19/96	29	%REC			1
Pyrene	129-00-0	QCBLK93974-1	03/13/96	03/19/96	73	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK93974-1	03/13/96	03/19/96	78	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK93974-1	03/13/96	03/19/96	68	%REC			1
Terphenyl-d14	1718-51-0	QCBLK93974-1	03/13/96	03/19/96	79	%REC			1
Phenol-d5	13127-88-3	QCBLK93974-1	03/13/96	03/19/96	82	%REC			1
2-Fluorophenol	367-12-4	QCBLK93974-1	03/13/96	03/19/96	76	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK93974-1	03/13/96	03/19/96	46	%REC			1

9613453.1691

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: B0H698

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
bis(2-Chloroethyl)Ether	111-44-4	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2-Chlorophenol	95-57-8	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
1,3-Dichlorobenzene	541-73-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
1,4-Dichlorobenzene	106-46-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
1,2-Dichlorobenzene	95-50-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2-Methylphenol	95-48-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
bis(2-Chloroisopropyl)Ether	108-60-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
4-Methylphenol	106-44-5	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
N-nitroso-di-n-propylamine	621-64-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Hexachloroethane	67-72-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Nitrobenzene	98-95-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Isophorone	78-59-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2-Nitrophenol	88-75-5	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2,4-Dimethylphenol	105-67-9	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2,4-Dichlorophenol	120-83-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
1,2,4-Trichlorobenzene	120-82-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Naphthalene	91-20-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
4-Chloroaniline	106-47-8	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Hexachlorobutadiene	87-68-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
4-Chloro-3-Methylphenol	59-50-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2-Methylnaphthalene	91-57-6	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Hexachlorocyclopentadiene	77-47-4	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
2,4,6-Trichlorophenol	88-06-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2,4,5-Trichlorophenol	95-95-4	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2-Chloronaphthalene	91-58-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2-Nitroaniline	88-74-4	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
DimethylPhthalate	131-11-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Acenaphthylene	208-96-8	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2,6-Dinitrotoluene	606-20-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
3-Nitroaniline	99-09-2	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
Acenaphthene	83-32-9	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2,4-Dinitrophenol	51-28-5	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
4-Nitrophenol	100-02-7	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
Dibenzofuran	132-64-9	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
2,4-Dinitrotoluene	121-14-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Diethylphthalate	84-66-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Fluorene	86-73-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
4-Nitroaniline	100-01-6	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
n-Nitrosodiphenylamine	86-30-6	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Hexachlorobenzene	118-74-1	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Pentachlorophenol	87-86-5	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
Phenanthrene	85-01-8	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Anthracene	120-12-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Carbazole	86-74-8	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Di-N-Butylphthalate	84-74-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Fluoranthene	206-44-0	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Pyrene	129-00-0	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
ButylBenzylPhthalate	85-68-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
3,3'-Dichlorobenzidine	91-94-1	QCBLK93974-1	03/13/96	03/19/96	22000	UG/KG	U	22000	1
Benzo(a)Anthracene	56-55-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Chrysene	218-01-9	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
di-N-OctylPhthalate	117-84-0	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Benzo(b)Fluoranthene	205-99-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Benzo(k)Fluoranthene	207-08-9	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Benzo(a)Pyrene	50-32-8	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: B0H698

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK93974-1	03/13/96	03/19/96	4500	UG/KG	U	4500	1
Unknown-1	TIC-32	QCBLK93974-1	03/13/96	03/19/96	3100	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK93974-1	03/13/96	03/19/96	2300	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK93974-1	03/13/96	03/19/96	1000	UG/KG	BJ		1
Nitrobenzene-d5	4165-60-0	QCBLK93974-1	03/13/96	03/19/96	76	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK93974-1	03/13/96	03/19/96	67	%REC			1
Terphenyl-d14	1718-51-0	QCBLK93974-1	03/13/96	03/19/96	74	%REC			1
Phenol-d5	13127-88-3	QCBLK93974-1	03/13/96	03/19/96	85	%REC			1
2-Fluorophenol	367-12-4	QCBLK93974-1	03/13/96	03/19/96	79	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK93974-1	03/13/96	03/19/96	42	%REC			1

9613453.1693

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H697

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S53301 SAS No.: SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-001

Sample wt/vol: 2.40 (g/mL) G Lab File ID: H5991

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. dec. Date Extracted: 03/13/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/19/96

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	4100	U
111-44-4	bis(2-Chloroethyl)Ether	4100	U
95-57-8	2-Chlorophenol	4100	U
541-73-1	1,3-Dichlorobenzene	4100	U
106-46-7	1,4-Dichlorobenzene	4100	U
95-50-1	1,2-Dichlorobenzene	4100	U
95-48-7	2-Methylphenol	4100	U
108-60-1	2,2'-oxybis(1-Chloropropane)	4100	U
106-44-5	4-Methylphenol	4100	U
621-64-7	N-Nitroso-Di-n-Propylamine	4100	U
67-72-1	Hexachloroethane	4100	U
98-95-3	Nitrobenzene	4100	U
78-59-1	Isophorone	4100	U
88-75-5	2-Nitrophenol	4100	U
105-67-9	2,4-Dimethylphenol	4100	U
111-91-1	bis(2-Chloroethoxy)Methane	4100	U
120-83-2	2,4-Dichlorophenol	4100	U
120-82-1	1,2,4-Trichlorobenzene	4100	U
91-20-3	Naphthalene	4100	U
106-47-8	4-Chloroaniline	4100	U
87-68-3	Hexachlorobutadiene	4100	U
59-50-7	4-Chloro-3-Methylphenol	4100	U
91-57-6	2-Methylnaphthalene	4100	U
77-47-4	Hexachlorocyclopentadiene	20000	U
88-06-2	2,4,6-Trichlorophenol	4100	U
95-95-4	2,4,5-Trichlorophenol	4100	U
91-58-7	2-Chloronaphthalene	4100	U
88-74-4	2-Nitroaniline	20000	U
131-11-3	Dimethyl Phthalate	4100	U
208-96-8	Acenaphthylene	4100	U
606-20-2	2,6-Dinitrotoluene	4100	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H697

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S53301 SAS No.: SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-001

Sample wt/vol: 2.40 (g/mL) G Lab File ID: H5991

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. dec. Date Extracted: 03/13/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/19/96

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	20000	U
83-32-9	Acenaphthene	4100	U
51-28-5	2,4-Dinitrophenol	20000	U
100-02-7	4-Nitrophenol	20000	U
132-64-9	Dibenzofuran	4100	U
121-14-2	2,4-Dinitrotoluene	4100	U
84-66-2	Diethylphthalate	4100	U
7005-72-3	4-Chlorophenyl-phenylether	4100	U
86-73-7	Fluorene	4100	U
100-01-6	4-Nitroaniline	20000	U
534-52-1	4,6-Dinitro-2-Methylphenol	20000	U
86-30-6	N-Nitrosodiphenylamine (1)	4100	U
101-55-3	4-Bromophenyl-phenylether	4100	U
118-74-1	Hexachlorobenzene	4100	U
87-86-5	Pentachlorophenol	20000	U
85-01-8	Phenanthrene	4100	U
120-12-7	Anthracene	4100	U
86-74-8	Carbazole	4100	U
84-74-2	Di-n-Butylphthalate	4100	U
206-44-0	Fluoranthene	4100	U
129-00-0	Pyrene	4100	U
85-68-7	Butylbenzylphthalate	4100	U
91-94-1	3,3'-Dichlorobenzidine	20000	U
56-55-3	Benzo(a)Anthracene	4100	U
218-01-9	Chrysene	4100	U
117-81-7	bis(2-Ethylhexyl)Phthalate	4100	U
117-84-0	Di-n-Octyl Phthalate	4100	U
205-99-2	Benzo(b)Fluoranthene	4100	U
207-08-9	Benzo(k)Fluoranthene	4100	U
50-32-8	Benzo(a)Pyrene	4100	U
193-39-5	Indeno(1,2,3-cd)Pyrene	4100	U
53-70-3	Dibenz(a,h)Anthracene	4100	U
191-24-2	Benzo(g,h,i)Perylene	4100	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H697

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S53301 SAS No.: SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-001

Sample wt/vol: 2.40 (g/mL) G Lab File ID: H5991

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. dec. Date Extracted: 03/13/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/19/96

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 0.50

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	UNKNOWN	15.34	4300	BJ
2. 0	UNKNOWN	19.57	1100	BJ
3. 0	UNKNOWN	24.92	2400	BJ
4. 0	UNKNOWN	27.10	1700	BJ

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H698

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S53301 SAS No.: SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-002

Sample wt/vol: 2.20 (g/mL) G Lab File ID: H5994

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. dec. Date Extracted: 03/13/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/19/96

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	4500	U
111-44-4	bis(2-Chloroethyl)Ether	4500	U
95-57-8	2-Chlorophenol	4500	U
541-73-1	1,3-Dichlorobenzene	4500	U
106-46-7	1,4-Dichlorobenzene	4500	U
95-50-1	1,2-Dichlorobenzene	4500	U
95-48-7	2-Methylphenol	4500	U
108-60-1	2,2'-oxybis(1-Chloropropane)	4500	U
106-44-5	4-Methylphenol	4500	U
621-64-7	N-Nitroso-Di-n-Propylamine	4500	U
67-72-1	Hexachloroethane	4500	U
98-95-3	Nitrobenzene	4500	U
78-59-1	Isophorone	4500	U
88-75-5	2-Nitrophenol	4500	U
105-67-9	2,4-Dimethylphenol	4500	U
111-91-1	bis(2-Chloroethoxy)Methane	4500	U
120-83-2	2,4-Dichlorophenol	4500	U
120-82-1	1,2,4-Trichlorobenzene	4500	U
91-20-3	Naphthalene	4500	U
106-47-8	4-Chloroaniline	4500	U
87-68-3	Hexachlorobutadiene	4500	U
59-50-7	4-Chloro-3-Methylphenol	4500	U
91-57-6	2-Methylnaphthalene	4500	U
77-47-4	Hexachlorocyclopentadiene	22000	U
88-06-2	2,4,6-Trichlorophenol	4500	U
95-95-4	2,4,5-Trichlorophenol	4500	U
91-58-7	2-Chloronaphthalene	4500	U
88-74-4	2-Nitroaniline	22000	U
131-11-3	Dimethyl Phthalate	4500	U
208-96-8	Acenaphthylene	4500	U
606-20-2	2,6-Dinitrotoluene	4500	U

9613453.1697

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H698

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S53301 SAS No.: SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-002

Sample wt/vol: 2.20 (g/mL) G Lab File ID: H5994

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. dec. Date Extracted: 03/13/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/19/96

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	22000	U
83-32-9	Acenaphthene	4500	U
51-28-5	2,4-Dinitrophenol	22000	U
100-02-7	4-Nitrophenol	22000	U
132-64-9	Dibenzofuran	4500	U
121-14-2	2,4-Dinitrotoluene	4500	U
84-66-2	Diethylphthalate	4500	U
7005-72-3	4-Chlorophenyl-phenylether	4500	U
86-73-7	Fluorene	4500	U
100-01-6	4-Nitroaniline	22000	U
534-52-1	4,6-Dinitro-2-Methylphenol	22000	U
86-30-6	N-Nitrosodiphenylamine (1)	4500	U
101-55-3	4-Bromophenyl-phenylether	4500	U
118-74-1	Hexachlorobenzene	4500	U
87-86-5	Pentachlorophenol	22000	U
85-01-8	Phenanthrene	4500	U
120-12-7	Anthracene	4500	U
86-74-8	Carbazole	4500	U
84-74-2	Di-n-Butylphthalate	4500	U
206-44-0	Fluoranthene	4500	U
129-00-0	Pyrene	4500	U
85-68-7	Butylbenzylphthalate	4500	U
91-94-1	3,3'-Dichlorobenzidine	22000	U
56-55-3	Benzo(a)Anthracene	4500	U
218-01-9	Chrysene	4500	U
117-81-7	bis(2-Ethylhexyl)Phthalate	4500	U
117-84-0	Di-n-Octyl Phthalate	4500	U
205-99-2	Benzo(b)Fluoranthene	4500	U
207-08-9	Benzo(k)Fluoranthene	4500	U
50-32-8	Benzo(a)Pyrene	4500	U
193-39-5	Indeno(1,2,3-cd)Pyrene	4500	U
53-70-3	Dibenz(a,h)Anthracene	4500	U
191-24-2	Benzo(g,h,i)Perylene	4500	U

(1) - Cannot be separated from Diphenylamine

9613453.1698

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H698

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S53301 SAS No.: SDG No.: W0932

Matrix: (soil/water) SOIL Lab Sample ID: 10533-002

Sample wt/vol: 2.20 (g/mL) G Lab File ID: H5994

Level: (low/med) LOW Date Received: 03/08/96

% Moisture: not dec. dec. Date Extracted: 03/13/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/19/96

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 0.50

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	UNKNOWN	15.33	3100	BJ
2. 0	UNKNOWN	24.92	2300	BJ
3. 0	UNKNOWN	27.10	1000	BJ

9613453.1699

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Client ID: BOH697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK94465-1	03/19/96	03/19/96	10.5	MG/KG	B	20.0	1
Antimony	7440-36-0	QCBLK94465-1	03/19/96	03/19/96	3.2	MG/KG	UN	6.0	1
Barium	7440-39-3	QCBLK94465-1	03/19/96	03/19/96	0.38	MG/KG	B	20.0	1
Beryllium	7440-41-7	QCBLK94465-1	03/19/96	03/19/96	0.06	MG/KG	U	0.50	1
Cadmium	7440-43-9	QCBLK94465-1	03/19/96	03/19/96	0.34	MG/KG	U	0.50	1
Calcium	7440-70-2	QCBLK94465-1	03/19/96	03/19/96	195	MG/KG	B	500	1
Chromium	7440-47-3	QCBLK94465-1	03/19/96	03/19/96	20.1	MG/KG		1.0	1
Cobalt	7440-48-4	QCBLK94465-1	03/19/96	03/19/96	0.36	MG/KG	U	5.0	1
Copper	7440-50-8	QCBLK94465-1	03/19/96	03/19/96	0.82	MG/KG	B	2.5	1
Iron	7439-89-6	QCBLK94465-1	03/19/96	03/19/96	72.5	MG/KG		10.0	1
Magnesium	7439-95-4	QCBLK94465-1	03/19/96	03/19/96	22.9	MG/KG	B	500	1
Manganese	7439-96-5	QCBLK94465-1	03/19/96	03/19/96	0.11	MG/KG	U	1.5	1
Nickel	7440-02-0	QCBLK94465-1	03/19/96	03/19/96	1.6	MG/KG	U	4.0	1
Potassium	7440-09-7	QCBLK94465-1	03/19/96	03/19/96	201	MG/KG	U	500	1
Silver	7440-22-4	QCBLK94465-1	03/19/96	03/19/96	0.50	MG/KG	U	1.0	1
Sodium	7440-23-5	QCBLK94465-1	03/19/96	03/19/96	20.5	MG/KG	B	500	1
Vanadium	7440-62-2	QCBLK94465-1	03/19/96	03/19/96	9.4	MG/KG		5.0	1
Zinc	7440-66-6	QCBLK94465-1	03/19/96	03/19/96	1.0	MG/KG	BN	2.0	1

9613453.1700

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Client ID: B0H697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Antimony	7440-36-0	QCBLK94465-1	03/19/96	03/19/96	42	%REC	N		1
Barium	7440-39-3	QCBLK94465-1	03/19/96	03/19/96	95	%REC			1
Beryllium	7440-41-7	QCBLK94465-1	03/19/96	03/19/96	94	%REC			1
Cadmium	7440-43-9	QCBLK94465-1	03/19/96	03/19/96	84	%REC			1
Chromium	7440-47-3	QCBLK94465-1	03/19/96	03/19/96	96	%REC			1
Cobalt	7440-48-4	QCBLK94465-1	03/19/96	03/19/96	95	%REC			1
Copper	7440-50-8	QCBLK94465-1	03/19/96	03/19/96	99	%REC			1
Manganese	7439-96-5	QCBLK94465-1	03/19/96	03/19/96	95	%REC			1
Nickel	7440-02-0	QCBLK94465-1	03/19/96	03/19/96	98	%REC			1
Silver	7440-22-4	QCBLK94465-1	03/19/96	03/19/96	81	%REC			1
Vanadium	7440-62-2	QCBLK94465-1	03/19/96	03/19/96	96	%REC			1
Zinc	7440-66-6	QCBLK94465-1	03/19/96	03/19/96	78	%REC	N		1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Client ID: BOH697

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Antimony	7440-36-0	QCBLK94465-1	03/19/96	03/19/96	52	%REC	N		1
Barium	7440-39-3	QCBLK94465-1	03/19/96	03/19/96	96	%REC			1
Beryllium	7440-41-7	QCBLK94465-1	03/19/96	03/19/96	95	%REC			1
Cadmium	7440-43-9	QCBLK94465-1	03/19/96	03/19/96	82	%REC			1
Chromium	7440-47-3	QCBLK94465-1	03/19/96	03/19/96	96	%REC			1
Cobalt	7440-48-4	QCBLK94465-1	03/19/96	03/19/96	96	%REC			1
Copper	7440-50-8	QCBLK94465-1	03/19/96	03/19/96	101	%REC			1
Manganese	7439-96-5	QCBLK94465-1	03/19/96	03/19/96	95	%REC			1
Nickel	7440-02-0	QCBLK94465-1	03/19/96	03/19/96	100	%REC			1
Silver	7440-22-4	QCBLK94465-1	03/19/96	03/19/96	81	%REC			1
Vanadium	7440-62-2	QCBLK94465-1	03/19/96	03/19/96	96	%REC			1
Zinc	7440-66-6	QCBLK94465-1	03/19/96	03/19/96	78	%REC	N		1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Client ID: B0H698

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Quanterra ID : 10533-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK94465-1	03/19/96	03/19/96	2.7	MG/KG	U	20.0	1
Antimony	7440-36-0	QCBLK94465-1	03/19/96	03/19/96	3.2	MG/KG	UN	6.0	1
Barium	7440-39-3	QCBLK94465-1	03/19/96	03/19/96	0.24	MG/KG	B	20.0	1
Beryllium	7440-41-7	QCBLK94465-1	03/19/96	03/19/96	0.06	MG/KG	U	0.50	1
Cadmium	7440-43-9	QCBLK94465-1	03/19/96	03/19/96	0.34	MG/KG	U	0.50	1
Calcium	7440-70-2	QCBLK94465-1	03/19/96	03/19/96	200	MG/KG	B	500	1
Chromium	7440-47-3	QCBLK94465-1	03/19/96	03/19/96	17.2	MG/KG		1.0	1
Cobalt	7440-48-4	QCBLK94465-1	03/19/96	03/19/96	0.36	MG/KG	U	5.0	1
Copper	7440-50-8	QCBLK94465-1	03/19/96	03/19/96	0.62	MG/KG	U	2.5	1
Iron	7439-89-6	QCBLK94465-1	03/19/96	03/19/96	23.2	MG/KG		10.0	1
Magnesium	7439-95-4	QCBLK94465-1	03/19/96	03/19/96	24.8	MG/KG	B	500	1
Manganese	7439-96-5	QCBLK94465-1	03/19/96	03/19/96	0.11	MG/KG	B	1.5	1
Nickel	7440-02-0	QCBLK94465-1	03/19/96	03/19/96	1.6	MG/KG	U	4.0	1
Potassium	7440-09-7	QCBLK94465-1	03/19/96	03/19/96	201	MG/KG	U	500	1
Silver	7440-22-4	QCBLK94465-1	03/19/96	03/19/96	0.50	MG/KG	U	1.0	1
Sodium	7440-23-5	QCBLK94465-1	03/19/96	03/19/96	28.4	MG/KG	B	500	1
Vanadium	7440-62-2	QCBLK94465-1	03/19/96	03/19/96	9.3	MG/KG		5.0	1
Zinc	7440-66-6	QCBLK94465-1	03/19/96	03/19/96	1.5	MG/KG	BN	2.0	1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Arsenic
Method: EPA 7060
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Arsenic	7440-38-2	QCBLK94376-1	03/18/96	03/19/96	0.44	MG/KG	B	1.0	1
B0H697	10533-001MS	Arsenic	7440-38-2	QCBLK94376-1	03/18/96	03/19/96	85	%REC			1
B0H697	10533-001MSD	Arsenic	7440-38-2	QCBLK94376-1	03/18/96	03/19/96	86	%REC			1
B0H698	10533-002	Arsenic	7440-38-2	QCBLK94376-1	03/18/96	03/19/96	0.29	MG/KG	B	1.0	1
NA	QCBLK94376-1	Arsenic	7440-38-2	QCBLK94376-1	03/18/96	03/19/96	0.10	MG/KG	U	1.0	1
NA	QCLCS94376-1	Arsenic	7440-38-2	QCBLK94376-1	03/18/96	03/19/96	109	%REC			20

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Lead
Method: EPA 7421
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Lead	7439-92-1	QCBLK94376-1	03/18/96	03/19/96	0.10	MG/KG	U	0.30	1
B0H697	10533-001MS	Lead	7439-92-1	QCBLK94376-1	03/18/96	03/19/96	103	%REC			1
B0H697	10533-001MSD	Lead	7439-92-1	QCBLK94376-1	03/18/96	03/19/96	105	%REC			1
B0H698	10533-002	Lead	7439-92-1	QCBLK94376-1	03/18/96	03/19/96	0.10	MG/KG	U	0.30	1
NA	QCBLK94376-1	Lead	7439-92-1	QCBLK94376-1	03/18/96	03/19/96	-0.18	MG/KG	B	0.30	1
NA	QCLCS94376-1	Lead	7439-92-1	QCBLK94376-1	03/18/96	03/19/96	99	%REC			20

9613453.1705

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Selenium
Method: EPA 7740
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Selenium	7782-49-2	QCBLK94376-1	03/18/96	03/19/96	3.7	MG/KG	N	0.50	1
B0H697	10533-001MS	Selenium	7782-49-2	QCBLK94376-1	03/18/96	03/19/96	70	%REC	N		1
B0H697	10533-001MSD	Selenium	7782-49-2	QCBLK94376-1	03/18/96	03/19/96	77	%REC	N		1
B0H698	10533-002	Selenium	7782-49-2	QCBLK94376-1	03/18/96	03/19/96	4.0	MG/KG	N	0.50	1
NA	QCBLK94376-1	Selenium	7782-49-2	QCBLK94376-1	03/18/96	03/19/96	-0.10	MG/KG	B	0.50	1
NA	QCLCS94376-1	Selenium	7782-49-2	QCBLK94376-1	03/18/96	03/19/96	105	%REC			40

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Thallium
Method: EPA 7841
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Thallium	7440-28-0	QCBLK94376-1	03/18/96	03/19/96	0.14	MG/KG	UN	0.10	1
B0H697	10533-001MS	Thallium	7440-28-0	QCBLK94376-1	03/18/96	03/19/96	82	%REC			1
B0H697	10533-001MSD	Thallium	7440-28-0	QCBLK94376-1	03/18/96	03/19/96	80	%REC	N		1
B0H698	10533-002	Thallium	7440-28-0	QCBLK94376-1	03/18/96	03/19/96	0.14	MG/KG	UN	0.10	1
NA	QCBLK94376-1	Thallium	7440-28-0	QCBLK94376-1	03/18/96	03/19/96	0.14	MG/KG	U	0.10	1
NA	QCLCS94376-1	Thallium	7440-28-0	QCBLK94376-1	03/18/96	03/19/96	121	%REC			40

9613453.1707

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Mercury
Method: EPA 7471
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Mercury	7439-97-6	QCBLK94409-1	03/18/96	03/18/96	0.03	MG/KG	BN	0.033	1
B0H697	10533-001MS	Mercury	7439-97-6	QCBLK94409-1	03/18/96	03/18/96	40	%REC	N		1
B0H697	10533-001MSD	Mercury	7439-97-6	QCBLK94409-1	03/18/96	03/18/96	36	%REC	N		1
B0H698	10533-002	Mercury	7439-97-6	QCBLK94409-1	03/18/96	03/18/96	0.03	MG/KG	BN	0.033	1
NA	QCBLK94409-1	Mercury	7439-97-6	QCBLK94409-1	03/18/96	03/18/96	0.027	MG/KG	B	0.033	1
NA	QCLCS94409-1	Mercury	7439-97-6	QCBLK94409-1	03/18/96	03/18/96	113	%REC			2

9613453.1708

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0H697

Lab Name: QUANTERRA MO Contract: 550.65

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0932

Matrix (soil/water): SOIL Lab Sample ID: 10533-001

Level (low/med): LOW Date Received: 03/08/96

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10.5	B		P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	0.44	B		F
7440-39-3	Barium	0.38	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	0.34	U		P
7440-70-2	Calcium	195	B		P
7440-47-3	Chromium	20.1			P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	0.82	B		P
7439-89-6	Iron	72.5			P
7439-92-1	Lead	0.10	U		F
7439-95-4	Magnesium	22.9	B		P
7439-96-5	Manganese	0.11	U		P
7439-97-6	Mercury	0.03	B	N	CV
7440-02-0	Nickel	1.6	U		P
7440-09-7	Potassium	201	U		P
7782-49-2	Selenium	3.7		N	F
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	20.5	B		P
7440-28-0	Thallium	0.14	U	N	F
7440-62-2	Vanadium	9.4			P
7440-66-6	Zinc	1.0	B	N	P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

9613453.1709

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0H698

Lab Name: QUANTERRA MO Contract: 550.65
Lab Code: ITMO Case No.: SAS No.: SDG No.: W0932
Matrix (soil/water): SOIL Lab Sample ID: 10533-002
Level (low/med): LOW Date Received: 03/08/96
% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2.7	U		P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	0.29	B		F
7440-39-3	Barium	0.24	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	0.34	U		P
7440-70-2	Calcium	200	B		P
7440-47-3	Chromium	17.2			P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	0.62	U		P
7439-89-6	Iron	23.2			P
7439-92-1	Lead	0.10	U		F
7439-95-4	Magnesium	24.8	B		P
7439-96-5	Manganese	0.11	B		P
7439-97-6	Mercury	0.03	B	N	CV
7440-02-0	Nickel	1.6	U		P
7440-09-7	Potassium	201	U		P
7782-49-2	Selenium	4.0		N	F
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	28.4	B		P
7440-28-0	Thallium	0.14	U	N	F
7440-62-2	Vanadium	9.3			P
7440-66-6	Zinc	1.5	B	N	P

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

Comments:

FORM I - IN

SW-846

9613453.1710

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Chloride
Method: EPA 300.0
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
BOH697	10533-001	Chloride	16887-00-6	QCBLK94625-2	03/20/96	03/20/96	3.26	UG/G		1.99	1
BOH697	10533-001DUP	Chloride	16887-00-6	QCBLK94625-2	03/20/96	03/20/96	3.35	UG/G		1.99	1
BOH697	10533-001MS	Chloride	16887-00-6	QCBLK94625-2	03/20/96	03/20/96	13	%REC			1
BOH698	10533-002	Chloride	16887-00-6	QCBLK94625-2	03/20/96	03/20/96	4.01	UG/G		1.98	1
NA	QCBLK94625-2	Chloride	16887-00-6	QCBLK94625-2	03/20/96	03/20/96	2.00	UG/G	U	2.00	1
NA	QCLCS94625-2	Chloride	16887-00-6	QCBLK94625-2	03/20/96	03/20/96	89	%REC			1

9613453.1711

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Fluoride
Method: EPA 300.0
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Fluoride	16984-48-8	QCBLK94625-2	03/20/96	03/20/96	0.99	UG/G	U	0.99	1
B0H697	10533-001DUP	Fluoride	16984-48-8	QCBLK94625-2	03/20/96	03/20/96	0.99	UG/G	U	0.99	1
B0H697	10533-001MS	Fluoride	16984-48-8	QCBLK94625-2	03/20/96	03/20/96	13	%REC			1
B0H698	10533-002	Fluoride	16984-48-8	QCBLK94625-2	03/20/96	03/20/96	0.99	UG/G	U	0.99	1
NA	QCBLK94625-2	Fluoride	16984-48-8	QCBLK94625-2	03/20/96	03/20/96	1.00	UG/G	U	1.0	1
NA	QCLCS94625-2	Fluoride	16984-48-8	QCBLK94625-2	03/20/96	03/20/96	99	%REC			1

9613453.1712

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Nitrate
Method: EPA 300.0
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Nitrate	NO3-N	QCBLK94625-2	03/20/96	03/20/96	12.4	UG/G		0.99	5
B0H697	10533-001DUP	Nitrate	NO3-N	QCBLK94625-2	03/20/96	03/20/96	12.4	UG/G		0.99	5
B0H697	10533-001MS	Nitrate	NO3-N	QCBLK94796-2	03/21/96	03/21/96	447	%REC			20
B0H698	10533-002	Nitrate	NO3-N	QCBLK94625-2	03/20/96	03/20/96	16.6	UG/G		0.99	5
NA	QCBLK94625-2	Nitrate	NO3-N	QCBLK94625-2	03/20/96	03/20/96	0.20	UG/G	U	0.20	1
NA	QCBLK94796-2	Nitrate	NO3-N	QCBLK94796-2	03/21/96	03/21/96	0.20	UG/G	U	0.20	1
NA	QCLCS94625-2	Nitrate	NO3-N	QCBLK94625-2	03/20/96	03/20/96	101	%REC			1
NA	QCLCS94796-2	Nitrate	NO3-N	QCBLK94796-2	03/21/96	03/21/96	103	%REC			1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Nitrite-N
Method: EPA 300.0
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Nitrite	NO2-N	QCBLK94625-2	03/20/96	03/20/96	0.20	UG/G	U	0.20	1
B0H697	10533-001DUP	Nitrite	NO2-N	QCBLK94625-2	03/20/96	03/20/96	0.20	UG/G	U	0.20	1
B0H697	10533-001MS	Nitrite	NO2-N	QCBLK94625-2	03/20/96	03/20/96	0	%REC			1
B0H698	10533-002	Nitrite	NO2-N	QCBLK94625-2	03/20/96	03/20/96	0.20	UG/G	U	0.20	1
NA	QCBLK94625-2	Nitrite	NO2-N	QCBLK94625-2	03/20/96	03/20/96	0.20	UG/G	U	0.20	1
NA	QCLCS94625-2	Nitrite	NO2-N	QCBLK94625-2	03/20/96	03/20/96	101	%REC			1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Orthophosphate
Method: EPA 300.0
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
BOH697	10533-001	Ortho-Phosphate	14265-44-2	QCBLK94625-2	03/20/96	03/20/96	4.97	UG/G	U	4.97	1
BOH697	10533-001DUP	Ortho-Phosphate	14265-44-2	QCBLK94625-2	03/20/96	03/20/96	4.97	UG/G	U	4.97	1
BOH697	10533-001MS	Ortho-Phosphate	14265-44-2	QCBLK94625-2	03/20/96	03/20/96	0	%REC			1
BOH698	10533-002	Ortho-Phosphate	14265-44-2	QCBLK94625-2	03/20/96	03/20/96	4.96	UG/G	U	4.96	1
NA	QCBLK94625-2	Ortho-Phosphate	14265-44-2	QCBLK94625-2	03/20/96	03/20/96	5.00	UG/G	U	5.00	1
NA	QCLCS94625-2	Ortho-Phosphate	14265-44-2	QCBLK94625-2	03/20/96	03/20/96	95	%REC			1

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: NO2-NO3
Method: EPA 353.1
Matrix: SOLID

Sample Date : 03/05/96
Receipt Date : 03/08/96
Report Date : 04/17/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H697	10533-001	Nitrate/Nitrite	NO2+NO3-N	QCBLK94366-1	03/18/96	03/18/96	1310	UG/G		248	500
B0H697	10533-001DUP	Nitrate/Nitrite	NO2+NO3-N	QCBLK94366-1	03/18/96	03/18/96	1310	UG/G		248	500
B0H697	10533-001MS	Nitrate/Nitrite	NO2+NO3-N	QCBLK94366-1	03/18/96	03/18/96	1250	%REC			500
B0H698	10533-002	Nitrate/Nitrite	NO2+NO3-N	QCBLK94366-1	03/18/96	03/18/96	1650	UG/G		249	500
NA	QCBLK94366-1	Nitrate/Nitrite	NO2+NO3-N	QCBLK94366-1	03/18/96	03/18/96	0.50	UG/G	U	0.50	1
NA	QCLCS94366-1	Nitrate/Nitrite	NO2+NO3-N	QCBLK94366-1	03/18/96	03/18/96	91	%REC			1

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W0932
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Quanterra
Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

APR 1996
RECEIVED
Data
Log In

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

April 29, 1996

Attention: Joan Kessner

SAF Number	:	B96-030
Date SDG Closed	:	March 15, 1996
Number of Samples	:	Two (2)
Sample Type	:	Other
SDG Number	:	W0932
Data Deliverable	:	Summary

I. Introduction

On March 8, 1996, two "other" matrix samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QTESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
60311901	B0H697	OTHER	03/08/96
60311902	B0H698	OTHER	03/08/96

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.

Quanterra
Environmental Services

The requested analyses were:

Gamma Spectroscopy
Gamma Scan by method RICHRC-5017
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Liquid Scintillation Counting
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method RICHRC-5058

III. Quality Control

The analytical results for each analysis performed under SDG W0932 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results, except for alpha/beta analysis where quality control sample results are reported as pCi/sample.

IV. Comments

Gamma Spectroscopy

Gamma Scan by method RICHRC-5017
The RDLs were not met on the batch samples or the blank. The batch count times had been reduced due to the high activity in the samples, therefore, the achieved MDAs are accepted and attributed to a matrix effect (high sample activity which required a reduced counting time). The LCS, batch blank, sample and sample duplicate (B0H697) results are within contractual requirements, except as noted.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The QC and client samples were flamed and recounted due to an unacceptable LCS recovery (77.4%, 4.1σ) on the initial count. The LCS recovery is improved on the recount (80.4%) but the result is still greater than 3 sigma from the expected (achieved 3.5σ). The LCS and all client sample results are within 1 sigma of the original results; the batch blank is within 2.7 sigma of its original result. The recount data are accepted and reported since the recovery is within the ±30% internal acceptance requirement and all other quality control parameters are met. Aliquots and count times were reduced for the client samples due to high screening activity. The measured activity exceeds the achieved MDA for the client samples. Except as noted, the LCS, batch blank, sample and sample duplicate (B0H697) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222
Aliquots and count times were reduced for the client samples due to high screening activity. The measured activity exceeds the achieved MDA for the client samples. Except as noted, the LCS, batch blank, sample and sample duplicate (B0H697) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
The matrix spike recovery is indeterminable due to a matrix effect (high sample activity). The activity of the sample is approximately 40 times greater than the spike that was added. The data is accepted based on all other acceptable quality control results. Except as noted, the matrix spike, LCS, batch blank, sample and sample duplicate (B0H697) results are within contractual requirements.

Total Uranium

Total Uranium by method RICHRC-5058
The matrix spike, LCS, batch blank, sample and sample duplicate (B0H697) results are within contractual requirements.

Quanterra
Environmental Services

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:

Suzanne Gaines

Suzanne Gaines
Project Manager

Quanterra Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0932
LAB SAMPLE ID:	60311901	**MATRIX:**	OTHER
CLIENT ID:	B0H697	**DATE RECEIVED:**	3/8/96 11:50:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
CO-58.	-1.90E-01	1.5E-01	1.6E-01	2.41E-01	pCi/g	N/A	RICHRC5017
CO-60.	4.26E+00	2.4E-01	4.9E-01	N/A	pCi/g	N/A	RICHRC5017
CS-137DA.	-2.72E-02	1.2E-01	1.2E-01	1.94E-01	pCi/g	N/A	RICHRC5017
EU-152.	-3.94E-01	2.9E-01	2.9E-01	4.48E-01	pCi/g	N/A	RICHRC5017
EU-154.	-1.52E-01	2.1E-01	2.1E-01	3.39E-01	pCi/g	N/A	RICHRC5017
EU-155.	1.36E+01	7.4E-01	1.5E+00	1.28E+00	pCi/g	N/A	RICHRC5017
FE-59.	8.36E-02	2.1E-01	2.1E-01	3.59E-01	pCi/g	N/A	RICHRC5017
U-235.	2.15E+02	2.4E+00	2.2E+01	N/A	pCi/g	N/A	RICHRC5017
U-238DLP.	3.65E+03	3.4E+01	3.7E+02	N/A	pCi/g	N/A	RICHRC5017
ALPHA	2.36E+03	9.2E+01	2.0E+02	8.17E+00	pCi/g	100.00%	RD3222
BETA	1.72E+04	4.1E+02	1.3E+03	4.10E+01	pCi/g	100.00%	RD3222
TC-99	5.16E+04	1.6E+02	5.5E+03	9.59E-01	pCi/g	95.10%	ITAS-IT-RS-0001
TOTAL-URANIUM	1.63E+04	N/A	2.2E+03	9.29E-02	ug/g	N/A	RICHRC5058

Number of Results: 13

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Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0932
LAB SAMPLE ID:	60311902	**MATRIX:**	OTHER
CLIENT ID:	B0H698	**DATE RECEIVED:**	3/8/96 11:50:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
CO-58.	-5.42E-02	6.3E-02	6.3E-02	1.02E-01	pCi/g	N/A	RICHRC5017
CO-60.	5.16E-02	6.4E-02	6.5E-02	1.17E-01	pCi/g	N/A	RICHRC5017
CS-137DA.	3.95E-02	4.8E-02	4.8E-02	8.31E-02	pCi/g	N/A	RICHRC5017
EU-152.	2.86E-03	1.0E-01	1.0E-01	1.75E-01	pCi/g	N/A	RICHRC5017
EU-154.	1.79E-01	1.2E-01	1.2E-01	2.34E-01	pCi/g	N/A	RICHRC5017
EU-155.	1.11E-01	2.6E-01	2.6E-01	4.26E-01	pCi/g	N/A	RICHRC5017
FE-59.	2.11E-02	1.3E-01	1.3E-01	2.25E-01	pCi/g	N/A	RICHRC5017
U-235.	5.31E+00	5.6E-01	7.7E-01	N/A	pCi/g	N/A	RICHRC5017
U-238DLP.	9.23E+01	6.8E+00	1.1E+01	N/A	pCi/g	N/A	RICHRC5017
ALPHA	1.34E+02	2.2E+01	2.4E+01	6.99E+00	pCi/g	100.00%	RD3222
BETA	1.37E+04	3.7E+02	1.1E+03	4.27E+01	pCi/g	100.00%	RD3222
TC-99	5.33E+04	1.6E+02	5.7E+03	9.59E-01	pCi/g	95.10%	ITAS-IT-RS-0001
TOTAL-URANIUM	4.19E+02	N/A	9.5E+01	9.29E-02	ug/g	N/A	RICHRC5058

Number of Results: 13

9613453.1722

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	1003119
Client ID:	BHI
Due Date:	4-29-96
Lab Sample Number or SDG:	W0932
Method Test Parameters:	alpha recount
Matrix:	Other

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

Comments on any "No' response: _____

First Level Review: Joel Klempner Date: 4-10-96

Second Level Review: Stephen T. Kirkenbling Date: 4-15-96

Form #: LS-038,2 /96, Rev.4

Report these recount results.

9613453.1723

174

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: -BHI NCM Initiated by: Joel Thompson 4-10-96

Sample Numbers: P031191S + all samples WO# 603119 + QC

Tests: alpha

Matrix: Other WO932

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):*** Samples flamed + recounted - LCS low bias

Comments/Explanation: If one uses ±3σ the spike is out of limits; if one examines it according to Data Review SOP of ±30% LCS is within limits both counts.

Notification (check appropriate area):

Client notified by (name and date): _____

- ☐ in writing
- ☐ by facsimile
- ☐ by telephone
- ☑ other (explain) Case narrative

Client's name and response: _____

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

Project Manager (signature and date): [signature] 4-15-96

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9613453.1724

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-

Corrective Action

Root Cause Initial and date: MK 4-10-96

Initial LCS recovery 77.4% at 4.1σ error;

Corrective Action Initial and Date: MK 4-10-96

Samples + QC flamed & recounted. Recount result of LCS is 80.4% recovery at 3.4σ error. Samples results agree within 1σ error of original counts. Recount data accepted to report for all samples + QC.
BLANK WITHIN 2.7σ OF ORIGINAL RESULT; LCS WITHIN 1σ OF ORIGINAL RESULT. 5/15/96

Responsibility for performing CA assigned to:

Actions to prevent recurrence Initial and Date:

First Level Supervisor: Joel T Kempema Date: 4-10-96

Responsible Manager: W. Mackellar Date: 4/29/96

Quality Assurance Review

- ☐ Anomaly
- ☐ Deficiency
- ☑ Rerun
- ☐ Further action required:

Assigned to:

QA signature: Beverly Atkins Date: 4/29/96

Corrective Action Verification

- ☑ Verified
- ☐ Cannot Verify (specify reason):

Nonconformance Memo Closure

QA signature/date: Beverly Atkins 4/29/96

9613453.1725

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	603119
Client ID:	BHI
Due Date:	4/29/96
Lab Sample Number or SDG:	W0932
Method Test Parameters:	B
Matrix:	other

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	✓
2. Were all sample holding times met?	✓			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	PK 4-3-96 ✗	✓		✓
C. QC Samples				
1. Is the blank yield within acceptance criteria			✓	✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			✓	✓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	✓
6. Is the LCS result within acceptance criteria?	✓			✓
7. Is the LCS yield within acceptance criteria			✓	✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			✓
9. MS/MSD results and yield meet acceptance criteria?			✓	✓
10. Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. Other				
1. Are all Nonconformances included and noted?			✓	✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked? (S) 3/27/96	✓			PK ✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No' response:
Samples value for above calcs MDA.

First Level Review: Pam Kenitzer Date: 4-3-96

Second Level Review: Stephen J Koenitzer Date: 4-15-96

Form #: LS-038,2 /96, Rev.4

000018

9613453.1726

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 603119

Client ID: BHI

Due Date: 4-29-96

Lab Sample Number or SDG: W0932

Method Test Parameters: Gamma

Matrix: Other

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	✓
2. Were all sample holding times met?	✓			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit? N cm	✓	✓		✓
C. QC Samples				
1. Is the blank yield within acceptance criteria			✓	✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? N cm	✓	✓		✓
3. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			✓	✓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	✓
6. Is the LCS result within acceptance criteria?	✓			✓
7. Is the LCS yield within acceptance criteria			✓	✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?			✓	✓
9. MS/MSD results and yield meet acceptance criteria?			✓	✓
10. Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. Other				
1. Are all Nonconformances included and noted?	✓		4-23-96	✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked? JK	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No' response:

First Level Review: [signature] Date: 4-23-96

Second Level Review: [signature] Date: 4/29/96

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

Report isotopes as listed on last page of summary Report.

9613453.1727

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QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-

Project ID: BHI

NCM Initiated by: Joel Kengama

Sample Numbers: 60311901, C0311901, 60311902

Tests: Gamma

Matrix: Other (Resin W0932

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):*** Isotopes marked detected not reported

Comments/Explanation:

60311901 = K40, Nb95, Cd109, Xe131M, Xe133 Hg203

C0311901 = K40, Nb95, Cd109, X131M, Xe133 Hg203

60311902 = K40, Nb95, Xe131M,

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): Sey Haines 4/29/96

000020

9613453.1728

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: JRK 4-23-96

K40 - 2x error > result, Cd109 = Known phantom caused by X-ray interaction with cave liners, Hg203 = Known phantom suspect to be a summing peak
Nb95 = Pa234M interference Xe131M = U235 interference
Xe133 = Th231 interference

Corrective Action Initial and Date: JRK 4-23-96

Data accepted with these exclusions

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

First Level Supervisor: Joel Benjamin Date: 4-22-96

Responsible Manager: W. MacKellar Date: 4/29/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: Beverly Ottavi Date: 4/29/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: Beverly Ottavi 4/29/96

9613453.1729

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QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHI

NCM Initiated by: Joel Kempema

Sample Numbers: P031191X, 6031190L, G031190 2, C031190 1

Tests: Gamma

Matrix: Resin (Other) W0932

Analytical Area (check appropriate area):

- ☐ Sample control
- ☐ GC
- ☐ Wet chemistry
- ☐ Data review
- ☐ Organic preparation
- ☐ HPLC
- ☐ Metals
- ☒ Radiochemistry
- ☐ Inorganic preparation
- ☐ GC/MS
- ☐ Reporting
- ☐ 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):*** _____

Comments/Explanation: Count time for QC was reduced to match the count time of the samples therefore the MDAs for 1 or more isotopes is greater than CL

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): Sey Haines 4/29/96

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: MK 4-23-96

high activity of samples

Corrective Action Initial and Date: MK 4-23-96

Data accepted with MDAs Achieved, for the blank
MK ~~MDDO~~ MDA's met = Co60, Cs137DA, Eu152, Eu155; MDAs > CL = Co58,
4-23-96 Fe59, Eu154. The sample & blank in this geometry
must be ~~calc~~ MK 4-23-96 counted for 1000 min to meet MDAs

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

First Level Supervisor: Joel Bergeman Date: 4-22-96

Responsible Manager: W. Mackellar Date: 4/29/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: Beverly Stevens Date: 4/29/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: Beverly Stevens 4/29/96

9613453.1731

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 603119

Client ID: BHI

Due Date: 4/29/96

Lab Sample Number or SDG: W0932

Method Test Parameters: TC-99

Matrix: Other

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	✓
2. Were all sample holding times met?	✓			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓ TKC 4-10-96		✓	✓
C. QC Samples				
1. Is the blank yield within acceptance criteria			✓	✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Linit but < Contract Detection Limit?			✓	✓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	✓
6. Is the LCS result within acceptance criteria?	✓			✓
7. Is the LCS yield within acceptance criteria			✓	✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?			✓	✓
9. MS/MSD results and yield meet acceptance criteria?		✓		✓
10. Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. Other				
1. Are all Nonconformances included and noted?	✓ NCR			✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked?	✓ 4-1-96			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No' response: _____

First Level Review: [signature] Date: 4-10-96 TKC 4-10-96

Second Level Review: [signature] Date: 4-16-96

Form #: LS-038,2 /96, Rev.4

9613453.1732

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QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHI
NCM Initiated by: Joel Thompson
Sample Numbers: A031902
Tests: Tc99
Matrix: Other (resin) W0932

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):*** MS out of limits

Comments/Explanation: When the MS activity has the sample activity subtracted the result is a negative value

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): Stephen J Koenitzer 4-16-96

9613453.1733

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-

Corrective Action

Root Cause Initial and date: JRC 4-10-96

Extremely high activity in sample

Corrective Action Initial and Date: JRC 4-10-96

Sample data accepted w/o MS. QC acceptable, dup w/in 1σ. Activity of samples approx 50,000 pCi/g

Responsibility for performing CA assigned to:

Actions to prevent recurrence Initial and Date:

First Level Supervisor: JR Joel Rengemann Date: 4-10-96

Responsible Manager: W. Max Keller Date: 4/29/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required:

Assigned to:

QA signature: Beverly Johnson Date: 4/29/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason):

Nonconformance Memo Closure

QA signature/date: Beverly Johnson 4/29/96

9613453.1734

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	603119
Client ID:	BHI
Due Date:	4-29-96
Lab Sample Number or SDG:	L0932 03-119
Method Test Parameters:	Uranium
Matrix:	Other

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?	✓			✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	✓
2. Were all sample holding times met?	✓			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples				
1. Is the blank yield within acceptance criteria			✓	✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			✓	✓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	✓
6. Is the LCS result within acceptance criteria?	✓			✓
7. Is the LCS yield within acceptance criteria			✓	✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			✓
9. MS/MSD results and yield meet acceptance criteria?	✓			✓
10. Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. Other				
1. Are all Nonconformances included and noted?			✓	✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked? [illegible] 4-10-96	✓			MC
5. Were all calculations checked at a minimum frequency?	✓	APR 4-17-96		✓
6. Units checked?	✓			✓

Comments on any "No' response: _____

First Level Review: [illegible] Date: 4-17-96

Second Level Review: Suzy Davies Date: 4/29/96

Form #: LS-038,2/96, Rev.4

9613453.1735

CHAIN OF

CUSTODY FORMS

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround
☐ Priority
■ Normal

Collector: Bob Fahlberg / David St. John	Company Contact: F. W. Gustafson	Telephone: (509) 372-9372
Project Designation: 200-UP-1 Pump and Treat - Spent Resin (1996)	Sampling Location: 200-UP-1 Pump and Treat	SAF No.: B96-030
Ice Chest No.: GWS-055	Field Logbook No.	Method of Shipment: Hand Delivered
Shipped To: Quanterra	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA
Possible Sample Hazards/Remarks: <.5 mrem/hr Dose		
Special Handling and/or Storage: Maintain samples between 2°C and 6°C.		

SAMPLE ANALYSIS: 603118 SDG W0932

Preservation	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	None	None			
Type of Container	P/G	Gs	aG	G	P/G	P/G	P			
No. of Container(s)	1	3	3	3	1	2	1			
Volume	60mL	40mL	60mL	60mL	60mL	1L	20mL			
	ICP Metals - TAL. AA Metals - As, Pb, Se, Tl, Hg.	VOA - TCL *1	Semi-VOA - TCL	Anions - F, Cl, PO_4, NO_2, NO_3	NO_2 - NO_3	*2 603119	Activity Scan			

Sample No.	Matrix*	Date Sampled	Time Sampled										
B0H697 01	X	03-05-96	0931	X	X	X	X	X	X	X			
B0H698 02	X	03-05-96	1020	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 13:05 3/5/96	Received By: B Whitten	Date/Time: 1305 3-5-96
Relinquished By: B Whitten	Date/Time: 1150 3-8-96	Received By: R. David Ritter	Date/Time: 3-8-96 1150
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
*1 Due to sample matrix, zero headspace will not be obtained.
*2 Gross Alpha, Gross Beta, Tc-99, Total Uranium, Gamma Spec.

Sample Matrix - ion exchange resin.

Sample analysis for PO_4, NO_2, and NO_3 by EPA 300.0 is being requested for information only. The ERC Contractor acknowledges that the 48 hour hold time will not be met.

For VOA and semi-VOA analysis, the resin should be treated as a soil.

Matrix*
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0000029

9613453.1736

9613453.1737

RECEIVED BY R. Boyd Carter 3/8/96 1150

RADIOACTIVE SHIPMENT RECORD

3. Page 1 of 1 | 34755

1. SHIP TO
Company: QUANTERRA
Address: 2800 GEORGE WASHINGTON WAY
City, State, Zip: RICHLAND WA 99352
Attention: KAREN ACTENBURGH
Phone: 375-3131 EXT 135

2. SHIP FROM U.S. DEPT. OF ENERGY C/O
Company: BHI HANFORD
Address: 4701-C 4100 AREA
City, State, Zip: RICHLAND WA 99352
Contact: BILL WHITTEN
Phone: 376-1878

4. Ship [X] Prepaid [ ] Collect
Via: [X] Motor-~~Rail~~ [ ] Air Psgr [ ] Excl. Use [ ] Air Cargo [ ] UPS Surface [ ] Mail [X] Site Carrier
SHIPMENT AUTHORIZATION NUMBER:

5. HM Proper Shipping Name: Radioactive Material,

	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	(other)		

6. Markings Applied: Package Orientation [ ]; Gross Weight [X]; Radioactive - LSA [ ]; Type A [ ]; Type B [ ]

7. For Normal Form Identify
Physical Form: [ ] Liquid [ ] Gas [X] Solid
Chemical Form: [ ] Metal [ ] Oxide [X] Elemental [ ] Nitrate [ ] Mixture
Other:

8. Additional RAM Desc.: Limited Quantity Radioactive Material [X]; Highway Route Controlled Quantity [ ]

9. Placards Applied [ ] Yes [X] No
If Rail Specify Placards
Route Plan [ ] Yes [X] No

10. EMERGENCY RESPONSE
Telephone: (509) 373-3800
Emergency Response Guide(s): #61

11a. TYPE PACKAGE: Strong Tight [X]; Type A [ ]; Type B [ ]; Type B(U) [ ]; Type B(M) [ ]

11b. CONSTRUCTION: [ ] Box, FB; [ ] Wood; [ ] Steel; [ ] Drum; [ ] Cask; Other: POLYCOOLER

11c. FISSILE CLASS: Non-Fissile [ ]; Fissile Exempt [X]; Fissile I [ ]; Fissile II [ ]; Fissile III [ ]; Gms Fissile: < 15 gms

11d. Labels Applied: Empty [ ]; Radioactive White I [ ]; Radioactive Yellow II [ ]; Radioactive Yellow III [ ]; Subsidiary Hazard [ ]

Warning -- Fissile Class III Shipment. Do Not Load More Than NA *Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.*

12. No. Pkgs.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Curies/Pkg	Gr. Wt.
1	STRONG TIGHT	N/A	N/A	N/A	Tc99 U238 U235	N/A	10.7 µCi	41 lbs
POLYCOOLER #GWS055 CONTAINS SAMPLES OF SPENT RESIN IN GLASS JARS. THE JARS ARE PACKED ON WET ICE AND VERMICULITE # BOH697 BOH698								
					TOTALS	N/A	10.7 µCi	41 lbs

(Shipper may describe package in detail on one of the unused lines above)

13. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.
Certifier's Signature On Behalf of DOE-RL: Cindy S Thompson | Date: 3/8/96 | Organization: FIELD SAMPLING | Complete Cost Code (Inc. End Function): X60126

14. Surface Dose Rate of Package: [X] <0.5 or ____ mrem/hr (N + β γ)
Dose Rate at 1 Meter from Surface of Package: [X] <0.5 or ____ mrem/hr (N + β γ)
Smears of Outer Container: [X] <22 dpm β γ /cm²; [X] <2.2 dpm α /cm²; [X] <Tbl. 2-2 HSRCM Onsite Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <200 mrem/hr (N + β γ); @ 6 feet [X] <10 mrem/hr (N + β γ); @ Cab or sleeper [X] <2 mrem/hr (N + β γ)
Additional Data and Instructions (inc. Readings on Internal Packaging)
Signature - Radiation Monitoring: [signature] | Bldg. 4701-C | Survey No. I-200-1134 | Date 3-8-96

15. PICKUP OF SHIPMENT: Vehicle ID 2598 | Driver B.T. WHITTEN
RECEIPT: Signature Bill Whitten | Date 3-8-96

16. Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: M.A. Sams | Printed Name: M.A. SAMS | Date 3-8-96

17. AIR TRANSPORT CERTIFICATION
CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: [ ] 1. Ltd Qty [ ] 2. <3 T.I. [ ] 3. Research/Medical Diagnosis [ ] 4. Human Medical Research
Pkg. Dimensions: NA

18. OFFSITE AUTHORIZATION
B/L: RMW-9876 | Date Shipped: 3-8-96 | Routing: SITE | ETA: 3-8-96
Surveyed By: ____ | Date: ____ | Approved for Shipment Offsite: M.A. Sams | Date: 3-8-96

☆ U.S. GOVERNMENT PRINTING OFFICE: 1995—693-181/21013

54-6000-088 (07/95)

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GUIDE 6

POTENTIAL HAZARDS

HEALTH HAZARDS

Low-level radioactive material; little personal radiation hazard.
Many packages are not required to have radioactive materials labels or markings.
Some radioactive materials cannot be detected by commonly available instruments.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.
Radioactivity does not change flammability or other properties of the materic

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Response actions may be performed prior to any radiation measurements.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Notify Radiation Authority of accident conditions.
Detain uninjured persons, isolate equipment with suspected contamination, and delay cleanup until instruction of Radiation Authority.

FIRE

Do not move damaged containers; move undamaged containers out of fire zone.
Small Fires: Dry chemical, CO_2, water spray or regular foam.
Large Fires: Water spray, fog (flooding amounts).

SPILL OR LEAK

Do not touch damaged containers or spilled material.
Small Liquid Spills: Take up with sand, earth or other noncombustible absorbent material.
Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

Use first aid treatment according to the nature of the injury.
Advise medical personnel that victim may be contaminated with low-level radioactive material.

Radioactive Material, excepted package - limited quantity of material, 7, UN2910

THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.421 FOR RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-LIMITED QUANITITY OF MATERIAL, UN2910

BECHTEL HANFORD INC.

SAMPLE STATUS REPORT FOR N 6264. RAD SCREEN BOH698 TIME: 3/ 6/96 8:44
DISPATCHED: 3/ 4/96 12:51 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/ 5/96 11:55

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	2.43000E 03 pCi/G	N	Y	X60618

END OF REPORT

2620 mL ≈ 2620 g FOR RESIN

$$\frac{2430 \times 10^{-12}\ \text{ci}}{\text{g}} \times 2620\,\text{g} = .63666 \times 10^{-5}\ \text{ci}$$

$$6.3666 \times 10^{-6}\ \text{ci}$$

$$\approx 6.4\ \mu\text{Ci}$$

96 13453.1741

SAMPLE STATUS REPORT FOR N 6263. RAD SCREEN BOH697 TIME: 3/ 6/96 8:44
DISPATCHED: 3/ 4/96 12:51 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/ 5/96 11:55

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
4271	TOT-ACT	1.66000E 03 pCi/G	N	Y	X60618

END OF REPORT

2620 ml ≈ 2620 g Resin

$$\frac{1660 \times 10^{-12}\ ci}{g} \times 2620\ g = .43492 \times 10^{-5}\ ci$$

$$4.3492 \times 10^{-6}\ ci$$

$$= 4.3\ uci$$

total = 10.7 uci

9613453.1742

SDG W0932

Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/8/96 1150 Client Name BHI

Project/Client # B96030 Batch or Case # _____

Cooler ID (if noted on outside of cooler) GW5055

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes [✓] No [ ]
3. Custody Seals dated and signed? Yes [✓] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [ ] No [✓]
5. Vermiculite/packing material is: Wet [✓] Dry [ ] _____
6. Each sample is in a plastic bag? Yes [✓] No [ ] _____
7. Number of sample containers in cooler: 28
8. Samples have:
   - ____ tape
   - ✓ hazard labels
   - ✓ custody seals
   - ✓ appropriate sample labels
9. Samples are:
   - ✓ in good condition
   - ____ leaking
   - ____ broken
   - ____ have air bubbles
   - ____ other
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) N/A
    Request for Analysis #(s) ↓
    Airbill # ↓ Carrier _____
12. Have any anomalies been identified above? Yes [ ] No [✓]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature R. Boyd R. Boyd Date/Time 3/8/96 1150

SDG W0932

603118 Chem
603119 Rad

Client Sample Screening Results

B 3/18/96

08-Mar-96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0G544		3/8/96 12:00:00 PM	QUAD21A	3/8/96 2:56:19 PM	B0G544	30	93	3.03	1053	34.15
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	56	0.07	760	0.95
Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00		1.00E+01	Alp; (Dpm/ 8.75E+00	(uCi/ 3.94E-04	(pCi/ 3.94E+02	± 4.6E+01	CAT I	6.3E-02	Lab
Ppt mg: 8.1	Units: L		ml	Bet; Alq): 6.77E+01	Sa): 3.05E-03	L|g): 3.05E+03	± 9.7E+01		1.6E-02	Alq L|g
BHI B0G545		3/8/96 11:00:00 AM	QUAD21B	3/8/96 2:56:19 PM	B0G545	30	25	0.78958333	265	7.9795833
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	35	0.04375	683	0.85375
Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00		1.00E+01	Alp; (Dpm/ 2.44E+00	(uCi/ 2.20E-04	(pCi/ 1.10E+02	± 3.0E+01	CAT I	2.3E-01	Lab
Ppt mg: 8	Units: L		ml	Bet; Alq): 1.52E+01	Sa): 1.37E-03	L|g): 6.85E+02	± 4.7E+01		7.3E-02	Alq L|g
BHI B0H656		3/8/96 11:00:00 AM	QUAD21C	3/8/96 2:56:19 PM	B0H656	30	16	0.48458333	838	27.088333
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	39	0.04875	676	0.845
Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00		1.00E+01	Alp; (Dpm/ 6.23E-01	(uCi/ 5.61E-05	(pCi/ 2.81E+01	± 2.0E+01	CAT I	8.9E-01	Lab
Ppt mg: 0.7	Units: L		ml	Bet; Alq): 5.29E+01	Sa): 4.77E-03	L|g): 2.38E+03	± 8.5E+01		2.1E-02	Alq L|g
BHI B0H657		3/8/96 11:00:00 AM	QUAD21D	3/8/96 2:56:19 PM	B0H657	30	12	0.345	57	1.0375
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	44	0.055	690	0.8625
Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00		1.00E+01	Alp; (Dpm/ 1.04E+00	(uCi/ 9.35E-05	(pCi/ 4.67E+01	± 2.3E+01	CAT I	5.3E-01	Lab
Ppt mg: 0.7	Units: L		ml	Bet; Alq): 1.84E+00	Sa): 1.66E-04	L|g): 8.28E+01	± 2.2E+01		6.0E-01	Alq L|g
BHI B0H697		3/8/96 11:00:00 AM	QUAD22A	3/8/96 2:56:23 PM	B0H697	30	1029	34.25125	23814	792.86875
01	SOLID		Bkg:	3/8/96 4:52:37 AM	BKG	800	39	0.04875	745	0.93125
Anl Date: 3/8/96	Tot Sa, Alq: 1.48E+03		5.34E+01	Alp; (Dpm/ 1.36E+02	(uCi/ 1.70E+00	(pCi/ 1.15E+03	± 3.7E+01	CAT III	4.4E-02	Lab
Ppt mg: 53.4	Units: g		mg	Bet; Alq): 1.60E+03	Sa): 2.00E+01	L|g): 1.35E+04	± 8.8E+01		7.4E-03	Alq L|g

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G 3/8/96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H698		3/8/96 11:00:00 AM	QUAD22B	3/8/96 2:56:23 PM	B0H698	30	424	14.0795833	16247	540.68417
02	SOLID		Bkg:	3/8/96 4:52:37 AM	BKG	800	43	0.05375	706	0.8825

Anl Date: 3/8/96	Tot Sa, Alq: 1.50E+03	, 6.47E+01	Alp;	(Dpm/ 4.85E+01	(uCi/ 5.07E-01	(pCi/ 3.38E+02	± 1.9E+01	CAT III	1.5E-01	Lab Alq
Ppt mg: 64.7	Units: g	, mg	Bet;	Alq): 1.12E+03	Sa): 1.17E+01	L|g): 7.78E+03	± 6.1E+01		1.3E-02	L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H773		3/8/96 11:00:00 AM	QUAD22C	3/8/96 2:56:23 PM	B0H773	30	18	0.55125	68	1.4116667
	LIQUID		Bkg:	3/8/96 4:52:37 AM	BKG	800	39	0.04875	684	0.855

Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp;	(Dpm/ 1.65E+00	(uCi/ 7.43E-05	(pCi/ 7.43E+01	± 2.4E+01	CAT I	3.4E-01	Lab Alq
Ppt mg: 3.4	Units: L	, ml	Bet;	Alq): 2.31E+00	Sa): 1.04E-04	L|g): 1.04E+02	± 2.2E+01		4.8E-01	L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H774		3/8/96 11:00:00 AM	QUAD22D	3/8/96 2:56:23 PM	B0H774	30	9	0.24125	47	0.6416667
	LIQUID		Bkg:	3/8/96 4:52:37 AM	BKG	800	47	0.05875	740	0.925

Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp;	(Dpm/ 7.11E-01	(uCi/ 3.20E-05	(pCi/ 3.20E+01	± 2.2E+01	CAT I	7.8E-01	Lab Alq
Ppt mg: 1.4	Units: L	, ml	Bet;	Alq): 1.06E+00	Sa): 4.79E-05	L|g): 4.79E+01	± 1.9E+01		1.0E+00	L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H776		3/8/96 11:00:00 AM	QUAD23A	3/8/96 2:56:32 PM	B0H776	30	102	3.355	4993	165.47333
	LIQUID		Bkg:	3/8/96 4:52:46 AM	BKG	800	36	0.045	768	0.96

Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	, 1.00E+01	Alp;	(Dpm/ 6.66E+00	(uCi/ 3.00E-04	(pCi/ 3.00E+02	± 3.9E+01	CAT I	8.3E-02	Lab Alq
Ppt mg: 8.4	Units: L	, ml	Bet;	Alq): 3.17E+02	Sa): 1.43E-02	L|g): 1.43E+04	± 2.0E+02		3.5E-03	L|g

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*** ALPHA ***

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CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Mar-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0932

MATRIX : OTHER B96-030

BATCH NUMBER 03-119

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P031191B				Blank
	P031191S				SPIKE EQ EG 1092 / 10.052 ± 0.086475 D1
1)	60311901		BHI	BOH697	CAT III reduced aliquots + Count time
	C0311901				Dup
2)	60311902		BHI	BOH698	

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 3/8/96

2) PREP LAB RECEIVED RD3222 WL gN 3-12-96 RICHRC5013

3) SAMPLE REMAINDER STORED 3/20/96 RVE

4) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB OD 3/20/96 RICHRD0007

6) DATA REVIEWED AND ANALYTICAL PREP STORED Rev

*** BETA ***

9613453.1746

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Mar-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0932

MATRIX : OTHER B96-030

BATCH NUMBER 03-119

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P0311918				Blank
	P0311915				EQAU 478
1)	60311901		BHI	BOH697	
	C0311901				Dup - CAT III reduced aliquots + Count
2)	60311902		BHI	BOH698	↓

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 3/8/96

2) PREP LAB RECEIVED JW RICHRC5013 3-12-96 RD3222 rev2

3) SAMPLE REMAINDER STORED 3/20/96 RDC

4) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB DD 3/20/96 RD4607 Rev 1

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 4-3-96 RICHRC002 0

4-29-96

9613453.1747 *** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Mar-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0932

MATRIX : OTHER B96-030

BATCH NUMBER 03-119

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P031191m				Cal 790
	P031191X				Ottawa fine Sand
1)	60311901		BHI	BOH697	
	C0311901			Dup.	CAT III - Reduced aliquot & count time
2)	60311902		BHI	BOH698	↓

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 3/8/96

2) PREP LAB RECEIVED JW 3-12-96 RICHRC5013 RG5017

3) SAMPLE REMAINDER STORED 3/20/96 RWE

4) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB OD 3/20/96 RICHRD0007 Ron

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 4-17-96 MK 4-17-96 RICHRC0002 Ron

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*** TC-99 ***

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4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Mar-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0932

MATRIX : OTHER B96-030

BATCH NUMBER 03-119

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	PC31191B PC31191S A0311902	P031191M P031192M			27 28 0.1000 g.
1)	60311901 C0311901		BHI	BOH697	0.1013 g 0.1033 g.
2)	60311902		BHI	BOH698	0.1016 g.

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 3/8/96

2) PREP LAB RECEIVED JW 3-12-96 RICHRC5013

3) SAMPLE REMAINDER STORED 3/20/96 RVE

4) SEPARATION LAB RECEIVED 3/22/96 MM
ITAS-IT-RS0001

5) COUNTING/MEASUREMENT LAB 3/28/96
RD4600 Rev1

6) DATA REVIEWED AND ANALYTICAL PREP STORED 4-10-96
RICHRC0002Rev

*** URANIUM ***

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CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Mar-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0932

MATRIX : OTHER B96-030

BATCH NUMBER 03-119

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P0311913 P0311915 EQIK177				
1)	60311901 C0311901		BHI	BOH697	
2)	60311902 A0311902 EQIK178		BHI	BOH698	

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 3/8/96

2) PREP LAB RECEIVED JN 3-12-96 RICHRC5013

3) SAMPLE REMAINDER STORED ~~3/20/96 RDZ~~ JN 3-25-96 3-25-96 JN

4) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB RICHRC5058 21/3/96

6) DATA REVIEWED AND ANALYTICAL PREP STORED JR 4-17-96 RICHRC0002 Rev B