W01799

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

0048836

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

September 23, 1997

Attention: Joan Kessner

Project number	:	550.232
Date Received by Lab	:	July 21, 1997
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W01799
Data Deliverable	:	Summary

I. Introduction

On July 21, 1997, one (1) soil sample was received by Quanterra, Richland and was transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the sample was given the following laboratory ID number to correspond with the specific client ID:

St. Louis ID	BHI ID	Richland ID	Matrix	Date of Receipt
15389-001	B0L633	70726401	Soil	07/21/97

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.

Analyses requested: Semivolatiles by EPA Method 8270. PCBs by EPA Method 8080. ICP Metals (As,Tl) by EPA Method 6010.

III. Quality Control

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

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

Shipping and Receiving
There were no variances associated with sample receipt.

Semivolatiles
Sample 15389-001 was received outside of the method holding time.

PCBs
Sample 15389-001 was received outside of the method holding time.

The LCS Percent Recovery was outside of the control limits (high), but the MS and MSD were in control so the data is valid.

The surrogate Percent Recoveries were high but there were no positive hits in the samples so the data is valid and is reported as is.

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

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
c:\\price$\hanford\hanw11799.nar

Sample Disposition Record

Control #: B97-050
Revision#: 0
Date Initiated: 7/1/97

Section 1 - BACKGROUND

SAF#: B97-120, B97-129, B97-133, B97-136
OU: 300-FF-1
Project ID: 300-FF-1 RD
Task ID: 1
Sampling Event: 300-FF-1 Process Trenches Verification Sampli, 300FF-1 South Process Pond, 300FF-1 North Process Pond, and 300FF-1 Ashpits/Clean Soil.
Laboratory: Quanterra, TMA
Project Coordinator: Koerner, CC
Task Manager: Johnson, CR

Section 2 - SAMPLE INFORMATION

Number of Samples:
ID Numbers: All off-site samples.
MATRIX: Soil
Collection Date:

Section 3 - ISSUE

Class: Lab Direction
NCR Number: N/A
Type: Clarification of Direction
Description: Chain of Custody (COC) for off-site analysis requests SemiVOA (8270A) TCL list with benzo(a)pyrene and chrysene. COC also requests ICP metals (6010A) with add-ons for arsenic and thallium.

N/A
NCR Validation (Print/Sign) Date

Section 4 - DISPOSITION

Type: Repair
Description: All off-site samples requesting SemiVOA or ICP metals analysis for SAF's B97-120, B97-129, B97-133, and B97-136 should be specifically analyzed for the mentioned tests as follows: Perform SemiVOA (8270A) analysis for benzo(a)pyrene and chrysene only. Perform ICP metals (6010A) analysis for arsenic and thallium only. Other requested analysis shall be performed according to COC directions.

Koerner, CC C L Tpl C. Koerner 7-8-97
Project Coordinator (Print/Sign) Date

Johnson, CR Charlie Johnson 7/16/97
Task Manager (Print/Sign) Date

N/A
QA (Print/Sign) Date

Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A
Inspection Results: N/A

N/A
Inspector (Print/Sign) Date

W01799

Quanterra August 01, 1997 04:25 pm
Account: 10722 Project: 550.232 Quanterra-Richland QAS No. 550.232 Rev. 0
Master Sample Login: 15389

Project Manager: W. Price

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

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
Comments								
# Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)	
Data:								
15389-001	B0L633	Soil	26-JUN-97 09:42	21-JUL-97 11:40	20-AUG-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70726401//SEE QAS FOR TARGET LISTS.								
1 AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	13-AUG-97	10-JUL-97	R12D	(319593:99)	
1	PCB/8080/Q4	S	COLD	13-AUG-97	10-JUL-97	R12D	(319594:98)	
1 AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	13-AUG-97	23-DEC-97	R12D	(319595:99)	
1	PM/IT/Q4	S	COLD	13-AUG-97	23-DEC-97	R12D	(319595:99)	
15389-001MS	B0L633	Soil	26-JUN-97 09:42	21-JUL-97 11:40	20-AUG-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70726401//SEE QAS FOR TARGET LISTS.								
1 AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	13-AUG-97	10-JUL-97	R12D	(319593:99)	
1	PCB/8080/Q4	S	COLD	13-AUG-97	10-JUL-97	R12D	(319594:98)	
1 AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	13-AUG-97	23-DEC-97	R12D	(319595:99)	
1	PM/IT/Q4	S	COLD	13-AUG-97	23-DEC-97	R12D	(319595:99)	
15389-001MSD	B0L633	Soil	26-JUN-97 09:42	21-JUL-97 11:40	20-AUG-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70726401//SEE QAS FOR TARGET LISTS.								
1 AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	13-AUG-97	10-JUL-97	R12D	(319593:99)	
1	PCB/8080/Q4	S	COLD	13-AUG-97	10-JUL-97	R12D	(319594:98)	
1 AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	13-AUG-97	23-DEC-97	R12D	(319595:99)	
1	PM/IT/Q4	S	COLD	13-AUG-97	23-DEC-97	R12D	(319595:99)	

C00003

*=Sample has not been rad screened.

Chain of Custody Record

Temp 2c CUR 11801 R12D
ST 10110
DC

Quanterra Environmental Services

QUA-4124-1

Client: Bechtel	Project Manager: Jodie Carnes	Date: 7-22-97	Chain Of Custody Number: 64689
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1
City / State / Zip Code	Site Contact	Lab Contact	Analysis (Attach list if more space is needed)
Project Name: SDF B97-133	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

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
10726401 BOL633	Chemical Analysis Matrices										

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- W01799

1. Relinquished By: Heidelberg Quanterra	Date: 7-22-97	Time: 16:00	1. Received By: Aaron Blake	Date: 7/23/97	Time: 0805
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

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

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | **B97-133-02** | Page 1 of 1

Collector Doug Bowers/RT Fahlberg	**Company Contact** Frank Gustafson	**Telephone No.** 373-5904	**Project Coordinator** Koerner, CC	**Data Turnaround** 45 Days
Project Designation 300-FF-1 North Process Pond	**Sampling Location** 300 area (300 FF-1)		**SAF No.** B97-133	
Ice Chest No.	**Field Logbook No.** EFL 1133-4		**Method of Shipment** Gov vehicle	
Shipped To Quanterra	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS
Possible radioactive

Special Handling and/or Storage
cool 4C

SAMPLE ANALYSIS
707264O1 SDG W01799

Preservation	None	None	None	Cool 4C	Cool 4C	None
Type of Container	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1
Volume	20ml	20ml	60ml	120ml	120ml	1000ml
	Activity Scan	Isotopic Uranium 707265	ICP Metals - 6010A (Add-on) (Arsenic, Thallium)	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene)	Gamma Spectroscopy (Cobalt-60) 707265

Sample No.	Matrix *	Sample Date	Sample Time									
BOL633	S	6-26-97	0942	X	X	X	X	X	X		BOL633	
~~BOL635~~	S	6-26-97	1516	X	X	X	X	X	X		BOL635 EXP 7-8-97	
						100	100	100				

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
For Doug Bowers	7/21/97 1140	Heidelberg	7/21/97 1140
		Laboratory	

SPECIAL INSTRUCTIONS
Copy, Samples split from original chain

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	

Post-it® Fax Note 7671 | Date | # of pages ▶ 1
To Dawn Rasmussen/Project | From Al Davis
Co./Dept. | Co.
Phone # | Phone # 373-9731
Fax # 376 8851 | Fax #

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L683

Project	300-FF-1 North Process Pond	
Customer ID	B0L683 Soil	
RCF ID	RCF1212	
	Sample time, date	942 6/26/97
	Analyses date	7/7/97

Isotope		Activity pCi/gm	2 s err	Ci/gm
K40	<	2.3e+01		2.3e-11
Co60	<	1.4e+00		1.4e-12
I129	<	1.7e+01		1.7e-11
Cs137	<	1.1e+00		1.1e-12
Eu152	<	4.5e+00		4.5e-12
Eu154	<	4.0e+00		4.0e-12
Eu155	<	7.0e+00		7.0e-12
Th32dau	<	7.1e+00		7.1e-12
U235	<	1.2e+01		1.2e-11
U238	<	2.4e+02		2.4e-10
U238dau	<	3.9e+00		3.9e-12
Np237	<	2.6e+00		2.6e-12
Am241	<	4.7e+00		4.7e-12
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00
Y/Sr-90	<	N/R		
Gross Alpha		3.8e+00	+/- 1.4e+00	3.8e-12
Gross Beta		3.3e+01	+/- 4.7e+00	3.3e-11 Reported as 137-Cs Betas.
AEA total	<	N/R		
			Total Activity (pCi/gm)	3.3e+01
			(Ci/gm)	3.3e-11

Note! 152-Eu is not a 100% Beta emitter.

Definitions:
All errors reported at 2 standard deviations
A Assigned as residual beta from Gamma/Beta balance
For soils and natural samples, the following applies:
The analysis of U238 is based on the activity of Pa234m

The analysis of Np237 is based on the activity of Pa233

U238dau is the activity of Pb214 and Bi214, short lived daughter products of U238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th32dau is the activity of Ac228, Pb212, and Tl208, short lived daughter products of 232Th. Equilibrium between parent and daughter products may not exist in disturbed materials.

Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analyses.

N/R means no result or analysis not requested.

SE Hoff by AWD 7-7-97
Radiological analyst Date

Albert I. Davis 07-07-97
Albert I. Davis Date
Radiological Manager

Project review Date

Figure 1

SAMPLE CHECK-IN LIST

[illegible]

Date/Time Received 7/21 1140 Client Name BHI

Project/Client # B97-133 Batch or Case # _____

Cooler ID (if noted on outside of cooler) BI 001

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 [✓] N/A
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 6
8. Samples have:
   - [✓] tape
   - [✓] custody seals
   - [ ] hazard labels
   - [ ] appropriate sample labels
9. Samples are:
   - [✓] in good condition
   - [ ] broken
   - [ ] other
   - [ ] leaking
   - [ ] have air bubbles
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 5°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-133-02
    Request for Analysis #(s) _____
    Airbill # N/A Carrier GSO Velo
12. Have any anomalies been identified above? Yes [ ] No [✓]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Heidelberg Date/Time 7/21/97 1140

Client Sample Screening Results

22-Jul-97

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
RUS B0L633		7/21/1997	QUAD24A	7/21/1997 1:23:19 PM	B0L633	30	76	2.49666667	457	14.308333
	SOLID		Bkg:	7/19/1997 12:03:17 AM	BKG	600	22	0.03666667	555	0.925

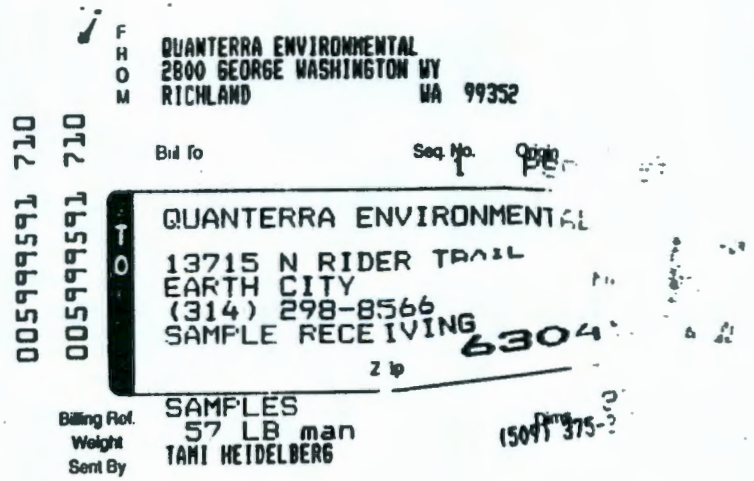
Anl Date: 7/22/1997	Tot Sa, Alq: 5.00E+02	, 1.01E+02	Alp; (Dpm/ 1.72E+01	(uCi/ 3.82E-02	(pCi/ 7.65E+01	± 9.2E+00	CAT II	6.5E-01	Lab Alq Lig
Ppt mg: 101.3	Units: g	, mg	Bet; Alq): 3.10E+01	Sa): 6.91E-02	Lig): 1.38E+02	± 7.1E+00		7.2E-01	

RUS TEDF0721971		7/21/1997	QUAD24B	7/21/1997 1:23:19 PM	TEDF0721971	30	10	0.27666667	53	0.8166667
	LIQUID		Bkg:	7/19/1997 12:03:17 AM	BKG	600	34	0.05666667	570	0.95

Anl Date: 7/22/1997	Tot Sa, Alq: 5.00E-01	, 1.00E+01	Alp; (Dpm/ 8.35E-01	(uCi/ 1.88E-05	(pCi/ 3.76E+01	± 2.3E+01	CAT I	6.6E-01	Lab Alq Lig
Ppt mg: 3	Units: L	, ml	Bet; Alq): 1.43E+00	Sa): 3.22E-05	Lig): 6.44E+01	± 2.1E+01		7.8E-01	

Reviewed 7/22/97

000010



FROM
QUANTERRA ENVIRONMENTAL
2800 GEORGE WASHINGTON WY
RICHLAND WA 99352

Bill To Seq. No. Origin

005999591 710

005999591 710

TO
QUANTERRA ENVIRONMENTAL
13715 N RIDER TRAIL
EARTH CITY
(314) 298-8566
SAMPLE RECEIVING 63045
Zip

Billing Ref. SAMPLES
Weight 57 LB man
Sent By TAMI HEIDELBERG
Dims (504) 375-

Quanterra
Environmental Services

011801

Login No.: 15389

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Hanford

Date: 7/2/97 Time: 805

Project No: 550.232

Initiated by: Aaron Blake

Shipper/No: Airborne 5999591 710

RFA/COC Numbers: 64689

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: 2°

Notes:

Corrective Action:

- ☐ Client's Name: _____ Informed verbally on: _____ By: _____
- ☐ Client's Name: _____ Informed in writing on: _____ By: _____
- ☐ Sample(s) processed "as is".
- ☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designee) Gary W Byrd Date: 7-23-97

Project Management Review: [signature] Date: 7/31/97

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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

000012

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 09/18/97

Client ID: B0L633

Quanterra ID : 15389-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK147352-1	07/31/97	09/08/97	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK147352-1	07/31/97	09/08/97	350	UG/KG	U	350	1
Aldol Condensation	TIC-4	QCBLK147352-1	07/31/97	09/08/97	18000	UG/KG	AJN		1
Unknown-1	TIC-32	QCBLK147352-1	07/31/97	09/08/97	370	UG/KG	J		1
Hexadecanoic acid	57-10-3	QCBLK147352-1	07/31/97	09/08/97	550	UG/KG	BJN		1
Unknown-2	TIC-33	QCBLK147352-1	07/31/97	09/08/97	260	UG/KG	J		1
Unknown-3	TIC-34	QCBLK147352-1	07/31/97	09/08/97	97	UG/KG	J		1
Unknown-4	TIC-35	QCBLK147352-1	07/31/97	09/08/97	110	UG/KG	J		1
Unknown-5	TIC-36	QCBLK147352-1	07/31/97	09/08/97	1600	UG/KG	J		1
Unknown-6	TIC-37	QCBLK147352-1	07/31/97	09/08/97	180	UG/KG	J		1
Unknown-7	TIC-7	QCBLK147352-1	07/31/97	09/08/97	250	UG/KG	J		1
Unknown-8	TIC-8	QCBLK147352-1	07/31/97	09/08/97	100	UG/KG	J		1
Unknown-9	TIC-9	QCBLK147352-1	07/31/97	09/08/97	240	UG/KG	J		1
Unknown-10	TIC-10	QCBLK147352-1	07/31/97	09/08/97	230	UG/KG	J		1
Unknown-11	TIC-11	QCBLK147352-1	07/31/97	09/08/97	320	UG/KG	J		1
Unknown-12	TIC-12	QCBLK147352-1	07/31/97	09/08/97	200	UG/KG	J		1
Unknown-13	TIC-13	QCBLK147352-1	07/31/97	09/08/97	350	UG/KG	J		1
Unknown-14	TIC-14	QCBLK147352-1	07/31/97	09/08/97	900	UG/KG	J		1
Unknown-15	TIC-15	QCBLK147352-1	07/31/97	09/08/97	190	UG/KG	J		1
Unknown-16	TIC-16	QCBLK147352-1	07/31/97	09/08/97	180	UG/KG	J		1
Unknown-17	TIC-17	QCBLK147352-1	07/31/97	09/08/97	170	UG/KG	J		1
Unknown-18	TIC-18	QCBLK147352-1	07/31/97	09/08/97	140	UG/KG	J		1
Unknown-19	TIC-19	QCBLK147352-1	07/31/97	09/08/97	450	UG/KG	J		1
Unknown-20	TIC-20	QCBLK147352-1	07/31/97	09/08/97	130	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK147352-1	07/31/97	09/08/97	78	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK147352-1	07/31/97	09/08/97	66	%REC			1
Terphenyl-d14	1718-51-0	QCBLK147352-1	07/31/97	09/08/97	58	%REC			1
Phenol-d5	4165-62-2	QCBLK147352-1	07/31/97	09/08/97	82	%REC			1
2-Fluorophenol	367-12-4	QCBLK147352-1	07/31/97	09/08/97	68	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK147352-1	07/31/97	09/08/97	37	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 09/18/97

Client ID: 80L633

Quanterra ID : 15389-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK147352-1	07/31/97	09/08/97	76	%REC			1
2-Chlorophenol	95-57-8	QCBLK147352-1	07/31/97	09/08/97	74	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK147352-1	07/31/97	09/08/97	63	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK147352-1	07/31/97	09/08/97	86	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK147352-1	07/31/97	09/08/97	63	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK147352-1	07/31/97	09/08/97	71	%REC			1
Acenaphthene	83-32-9	QCBLK147352-1	07/31/97	09/08/97	66	%REC			1
4-Nitrophenol	100-02-7	QCBLK147352-1	07/31/97	09/08/97	65	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK147352-1	07/31/97	09/08/97	63	%REC			1
Pentachlorophenol	87-86-5	QCBLK147352-1	07/31/97	09/08/97	38	%REC			1
Pyrene	129-00-0	QCBLK147352-1	07/31/97	09/08/97	60	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK147352-1	07/31/97	09/08/97	84	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK147352-1	07/31/97	09/08/97	65	%REC			1
Terphenyl-d14	1718-51-0	QCBLK147352-1	07/31/97	09/08/97	60	%REC			1
Phenol-d5	4165-62-2	QCBLK147352-1	07/31/97	09/08/97	87	%REC			1
2-Fluorophenol	367-12-4	QCBLK147352-1	07/31/97	09/08/97	74	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK147352-1	07/31/97	09/08/97	39	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 09/18/97

Client ID: B0L633

Quanterra ID : 15389-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK147352-1	07/31/97	09/08/97	78	%REC			1
2-Chlorophenol	95-57-8	QCBLK147352-1	07/31/97	09/08/97	76	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK147352-1	07/31/97	09/08/97	67	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK147352-1	07/31/97	09/08/97	89	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK147352-1	07/31/97	09/08/97	65	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK147352-1	07/31/97	09/08/97	74	%REC			1
Acenaphthene	83-32-9	QCBLK147352-1	07/31/97	09/08/97	72	%REC			1
4-Nitrophenol	100-02-7	QCBLK147352-1	07/31/97	09/08/97	66	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK147352-1	07/31/97	09/08/97	67	%REC			1
Pentachlorophenol	87-86-5	QCBLK147352-1	07/31/97	09/08/97	31	%REC			1
Pyrene	129-00-0	QCBLK147352-1	07/31/97	09/08/97	61	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK147352-1	07/31/97	09/08/97	85	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK147352-1	07/31/97	09/08/97	68	%REC			1
Terphenyl-d14	1718-51-0	QCBLK147352-1	07/31/97	09/08/97	58	%REC			1
Phenol-d5	4165-62-2	QCBLK147352-1	07/31/97	09/08/97	87	%REC			1
2-Fluorophenol	367-12-4	QCBLK147352-1	07/31/97	09/08/97	73	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK147352-1	07/31/97	09/08/97	39	%REC			1

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L633

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S38901 SAS No.: SDG No.: W01799

Matrix: (soil/water) SOIL Lab Sample ID: 15389-001

Sample wt/vol: 30.00 (g/mL) G Lab File ID: A9085

Level: (low/med) LOW Date Received: 07/21/97

% Moisture: 7 decanted: (Y/N) N Date Extracted: 07/31/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/08/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
218-01-9	Chrysene	350	U
50-32-8	Benzo(a)Pyrene	350	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B0L633

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S38901 SAS No.: SDG No.: W01799

Matrix: (soil/water) SOIL Lab Sample ID: 15389-001

Sample wt/vol: 30.00 (g/mL) G Lab File ID: A9085

Level: (low/med) LOW Date Received: 07/21/97

% Moisture: 7 decanted: (Y/N) N Date Extracted: 07/31/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/08/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 22 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Aldol Condensation	4.43	18000	AJN
2.		UNKNOWN	20.08	370	J
3.	57103	Hexadecanoic acid	21.42	550	BJN
4.		UNKNOWN	22.93	260	J
5.		UNKNOWN	24.83	97	J
6.		UNKNOWN	26.44	110	J
7.		UNKNOWN	26.91	1600	J
8.		UNKNOWN	27.26	180	J
9.		UNKNOWN	28.04	250	J
10.		UNKNOWN	28.21	100	J
11.		UNKNOWN	28.66	240	J
12.		UNKNOWN	28.80	230	J
13.		UNKNOWN	28.91	320	J
14.		UNKNOWN	29.00	200	J
15.		UNKNOWN	29.09	350	J
16.		UNKNOWN	29.17	900	J
17.		UNKNOWN	29.53	190	J
18.		UNKNOWN	30.24	180	J
19.		UNKNOWN	31.08	170	J
20.		UNKNOWN	31.42	140	J
21.		UNKNOWN	31.61	450	J
22.		UNKNOWN	32.27	130	J

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 09/05/97

Client ID: B0L633

Quanterra ID : 15389-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
Aroclor-1221	11104-28-2	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
Aroclor-1232	11141-16-5	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
Aroclor-1242	53469-21-9	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
Aroclor-1248	12672-29-6	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
Aroclor-1254	11097-69-1	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
Aroclor-1260	11096-82-5	QCBLK146920-1	07/28/97	07/30/97	36	UG/KG	U	36	1
TCMX	877-09-8	QCBLK146920-1	07/28/97	07/30/97	166	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 09/05/97

Client ID: B0L633

Quanterra ID : 15389-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK146920-1	07/28/97	07/30/97	100	%REC			1
Aroclor-1260	11096-82-5	QCBLK146920-1	07/28/97	07/30/97	118	%REC			1
TCMX	877-09-8	QCBLK146920-1	07/28/97	07/30/97	168	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 09/05/97

Client ID: 80L633

Quanterra ID : 15389-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK146920-1	07/28/97	07/30/97	138	%REC			1
Aroclor-1260	11096-82-5	QCBLK146920-1	07/28/97	07/30/97	133	%REC			1
TCMX	877-09-8	QCBLK146920-1	07/28/97	07/30/97	122	%REC			1

1D

PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L633

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01799

Matrix: (soil/water) SOIL Lab Sample ID: 15389-001

Sample wt/vol: 30.2 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 06-26-97

% Moisture: not dec. 7 dec. _____ Date Extracted: 07-28-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07-30-97

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

U: Concentration of analyte is less than the value given.

FORM I PEST

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 08/29/97

Client ID: B0L633

Quanterra ID : 15389-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK148184-1	08/08/97	08/08/97	2.4	MG/KG		1.1	1
Thallium	7440-28-0	QCBLK148184-1	08/08/97	08/08/97	3.3	MG/KG		1.1	1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 08/29/97

Client ID: B0L633

Quanterra ID : 15389-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK148184-1	08/08/97	08/08/97	100	%REC			1
Thallium	7440-28-0	QCBLK148184-1	08/08/97	08/08/97	93	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 06/26/97
Receipt Date : 07/21/97
Report Date : 08/29/97

Client ID: B0L633

Quanterra ID : 15389-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK148184-1	08/08/97	08/08/97	96	%REC			1
Thallium	7440-28-0	QCBLK148184-1	08/08/97	08/08/97	90	%REC			1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L633

Lab Name: QUANTERRA_MO_____ Contract: 550.232___
Lab Code: ITMO___ Case No.:_____ SAS No.:_____ SDG No.: W01799_____
Matrix (soil/water): SOIL_ Lab Sample ID: 15389-001
Level (low/med): LOW__ Date Received: 07/21/97
% Solids: _92.7

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.4			P
7440-28-0	Thallium	3.3			P

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

Comments:

_____

_____

_____

_____

FORM I - IN

SW-846

Quanterra
Environmental
Services

Analytical Data Package Prepared For

Bechtel Hanford

Analysis By

Quanterra Environmental Services

Richland Laboratory

Report Nbr: 3320

SDG No.	SAF No.	CLIENT ID No.	QUANTERRA ID No.
W01799	B97-133	B0L633	70726501

Comments:

Quanterra
Environmental Services

CERTIFICATE OF ANALYSIS

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

August 22, 1997

Attention: Joan Kessner

SAF Number	:	B97-133
Date SDG Closed	:	August 4, 1997
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W01799
Data Deliverable	:	Summary

I. Introduction

On July 21, 1997, one soil sample was received by the Quanterra Environmental Services Richland Laboratory (QTESRL) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford (BHI) specific ID:

QTESRL ID#	BHI ID#	MATRIX	DATE OF INITIATION
70726501	B0L633	SOIL	7/21/97

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Uranium-234, -235, -238 by method RICH-RC-5030
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017

III. Quality Control

The analytical results for each analysis performed under SDG W01799 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.

IV. Comments

Alpha Spectroscopy

Uranium-234, -235, -238 by method RICH-RC-5030
The sample aliquots were reduced based on screening results. The LCS, batch blank, sample and sample duplicate (B0L633) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017
The LCS, batch blank, sample and sample duplicate (B0L633) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Jodie Carnes
Project Manager

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W01799 / 3320
LAB SAMPLE ID:	70726501	**MATRIX:**	SOIL
CLIENT ID:	B0L633	**DATE RECEIVED:**	7/21/1997 11:40:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	2.41E+01	1.2E+00	4.0E+00	7.56E-02	pCi/g	79.70%	RICHRC5030
U-235	8.04E-01	2.2E-01	2.6E-01	4.10E-02	pCi/g	79.70%	RICHRC5030
U-238	2.38E+01	1.2E+00	4.0E+00	8.99E-02	pCi/g	79.70%	RICHRC5030
CO-60	-3.81E-04	1.1E-02	1.1E-02	1.90E-02	pCi/g	N/A	RICHRC5017
CS-137DA	3.72E-03	1.1E-02	1.1E-02	1.92E-02	pCi/g	N/A	RICHRC5017
EU-152	-3.08E-02	3.2E-02	3.2E-02	5.01E-02	pCi/g	N/A	RICHRC5017
EU-154	2.51E-02	3.2E-02	3.2E-02	5.69E-02	pCi/g	N/A	RICHRC5017
EU-155	4.56E-02	3.4E-02	3.5E-02	5.55E-02	pCi/g	N/A	RICHRC5017
K-40	1.21E+01	4.9E-01	1.3E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.65E-01	3.6E-02	7.5E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	5.01E-01	5.6E-02	7.5E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	7.06E-01	6.7E-02	9.7E-02	1.43E-01	pCi/g	N/A	RICHRC5017
U-235HP	5.95E-01	1.2E-01	1.3E-01	N/A	pCi/g	N/A	RICHRC5017
U-238	8.21E+00	4.7E-01	9.4E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 14

Result = IDL When Not Detected

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	707265
Client ID:	BH1
Due Date:	9-4-97
Lab Sample Number or SDG:	W01799
Method Test Parameters:	U-150
Matrix:	SOIL

Review Item	Yes (✓)	No (✓)	NA (✓)	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 filled 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 Kingsman Date: 8-21-97

Second Level Review: Jodie Cox Date: 8/22/97

Form #: LS-038.2 /96, Rev 4

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 707265

Client ID: BHI

Due Date: 9-4-97

Lab Sample Number or SDG: W01799

Method Test Parameters: Gamma

Matrix: Soil

Review Item	Yes (✓)	No (✓)	NA (✓)	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?	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No" response:

First Level Review: Joel Kingsman Date: 8-26-97

Second Level Review: Debbie Date: 8/27/97

Form #: LS-038.2/96, Rev 4

Report BHIS + Sample Geo. Sample & Dup also report K40, Ra226DA, Ra226DA, Ra228DA, U235HP, U238DHP.

CHAIN OF

CUSTODY FORMS

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-133-02	Page 1 of 1

Collector Doug Bowers/RT Fahlberg	**Company Contact** Frank Gustafson	**Telephone No.** 373-5904	**Project Coordinator** Koerner, CC	**Date Turnaround** 45 Days
Project Designation 300-FF-1 North Process Pond	**Sampling Location** 300 area (300 FF-1)		**SAF No.** B97-133	
Ice Chest No.	**Field Logbook No.** EFL 1133-4		**Method of Shipment** Gov vehicle	
Shipped To Quanterra	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS
Possible radioactive

Special Handling and/or Storage
cool 4C

SAMPLE ANALYSIS
707264O1 SDG W01799

Preservation	None	None	None	Cool 4C	Cool 4C	None				
Type of Container	P	P	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	20ml	20ml	60ml	120ml	120ml	1000ml				
	Activity Scan	Isotopic Uranium 707265	ICP Metals - 6010A (Addon) (Arsenic, Thallium)	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene)	Gamma Spectroscopy (Cobalt-60) 707265				

Sample No.	Matrix *	Sample Date	Sample Time									
B0L633	S	6-26-97	0942	X	X	X	X	X	X		B0L633	
~~B0L635~~	S	6-26-97	1416	X	X	X	X	X	X		B0L635 EMB 7-8-97	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Fa Doug Bowers	7/21/97 1140	Hildebrand	7/21/97 1140
[illegible]		Hildebrand	

SPECIAL INSTRUCTIONS
Copy, Samples split from original chain

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

Post-it® Fax Note 7671 | Date | # of pages ▶ 1
To Dawn Brown/Bryant | From Al Davis
Co./Dept. | Co.
Phone # | Phone # 373-9731
Fax # 376 8851 | Fax #

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L683

Project	300-FF-1 North Process Pond	
Customer ID	B0L683 Soil	
RCF ID	RCF1212	
	Sample time, date	942 6/26/97
	Analysis date	7/7/97

Isotope		Activity pCi/gm	2 s err	Ci/gm	
K40	<	2.3e+01		2.3e-11	
Co60	<	1.4e+00		1.4e-12	
I129	<	1.7e+01		1.7e-11	
Cs137	<	1.1e+00		1.1e-12	
Eu152	<	4.5e+00		4.5e-12	
Eu154	<	4.0e+00		4.0e-12	
Eu155	<	7.0e+00		7.0e-12	
Th32dau	<	7.1e+00		7.1e-12	
U235	<	1.2e+01		1.2e-11	
U238	<	2.4e+02		2.4e-10	
U238dau	<	3.9e+00		3.9e-12	
Np237	<	2.6e+00		2.6e-12	
Am241	<	4.7e+00		4.7e-12	
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00	
Y/Sr-90	<	N/R			
Gross Alpha		3.8e+00	+/- 1.4e+00	3.8e-12	
Gross Beta		3.3e+01	+/- 4.7e+00	3.3e-11	Reported as 137-Cs Betas.
AEA total	<	N/R			
			Total Activity (pCi/gm)		3.3e+01
			(Ci/gm)		3.3e-11

Definitions:

All errors reported at 2 standard deviations
A Assigned as residual beta from Gamma/Beta balance
For soils and natural samples, the following applies:
The analysis of U238 is based on the activity of Pa234m

The analysis of Np237 is based on the activity of Pa233

U238dau is the activity of Pb214 and Bi214, short lived daughter products of U238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th32dau is the activity of Ac228, Pb212, and Tl208, short lived daughter products of 232Th. Equilibrium between parent and daughter products may not exist in disturbed materials.

Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.

N/R means no result or analysis not requested.

Note! 152-Eu is not a 100% Beta emitter.

SE Huff by AHD 7-7-97
Radiological analyst Date

Albert L Davis 07-07-97
Albert L. Davis Date
Radiological Manager

Project review Date

Figure 1

SAMPLE CHECK-IN LIST

[illegible]

Data/Time Received 7/21 1140 Client Name BHI

Project/Client # B97-133 Batch or Case # W01799

Cooler ID (if noted on outside of cooler) BI 001

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 [ ] N/A
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 6
8. Samples have:
   - [✓] tape
   - [✓] custody seals
   - [ ] hazard labels
   - [ ] appropriate sample labels
9. Samples are:
   - [✓] in good condition
   - [ ] broken
   - [ ] other
   - [ ] leaking
   - [ ] have air bubbles
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 5°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-133-02
    Request for Analysis #(s) N/A
    Airbill # N/A Carrier GO Velo
12. Have any anomalies been identified above? Yes [ ] No [✓]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Heidelberg Date/Time 7/21/97 1140

Client Sample Screening Results

22-Jul-97

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
RUS B0L633		7/21/1997	QUAD24A	7/21/1997 1:23:19 PM	B0L633	30	76	2.49666667	457	14.308333
	SOLID		Bkg:	7/19/1997 12:03:17 AM	BKG	600	22	0.03666667	555	0.925

Anl Date: 7/22/1997	Tot Sa, Alq: 5.00E+02	, 1.01E+02	Alp;	(Dpm/	1.72E+01	(uCi/	3.82E-02	(pCi/	7.65E+01	± 9.2E+00	CAT II	6.5E-01	Lab Alq
Ppt mg: 101.3	Units: g	, mg	Bet;	Alq):	3.10E+01	Sa):	6.91E-02	Lig):	1.38E+02	± 7.1E+00		7.2E-01	Lig

RUS TEDF0721971		7/21/1997	QUAD24B	7/21/1997 1:23:19 PM	TEDF0721971	30	10	0.27666667	53	0.8166667
	LIQUID		Bkg:	7/19/1997 12:03:17 AM	BKG	600	34	0.05666667	570	0.95

Anl Date: 7/22/1997	Tot Sa, Alq: 5.00E-01	, 1.00E+01	Alp;	(Dpm/	8.35E-01	(uCi/	1.88E-05	(pCi/	3.76E+01	± 2.3E+01	CAT I	6.6E-01	Lab Alq
Ppt mg: 3	Units: L	, ml	Bet;	Alq):	1.43E+00	Sa):	3.22E-05	Lig):	6.44E+01	± 2.1E+01		7.8E-01	Lig

Reviewed 7/22/97

000016

Due 9-4-97

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

22-Jul-1997
Page 1

CUSTOMER: BHI SAF - SAMPLE DELIVERY GROUP WO1799

MATRIX : SOIL B97-133 BATCH NUMBER 07-265

	QES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	T0726578 T0726515				
1)	70726501 R0726501		BHI	BOL633	REDUCED ALIQUOT: High VB Screening Results due 8-7-97

ACTIONS (Initial & Date)

1) INITIATED JH 7/22/97
SOP(S) # RD3560

2) PREP LAB RECEIVED 7-24-97 ovc
SOP(S) # RICHRC5013-0
REC 8-7-97 W/ RICHRC5019

3) SAMPLE REMAINDER STORED 8-7-97 ovc
SOP(S) # n/a

4) SEPARATION LAB RECEIVED 08/14/97 Lw
SOP(S) # RICHREC 5030

5) COUNTING/MEASUREMENT LAB 8/26/97
SOP(S) # RICHRC0035

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 8-21-97
SOP(S) # RICHRC0002 Rev 1

1st extraction BB 8-18-97 RICHRC5030
2nd extraction BB 8-19-97 RICHRC5030
E.D. BB 8-20-97 RICHRC5039.1

Due 9-4-97

GAMMA

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

22-Jul-1997
Page 1

CUSTOMER: BHI SAF — SAMPLE DELIVERY GROUP WO1799

MATRIX SOIL B97-133 BATCH NUMBER 07-265

	GES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	~~T0726517~~ T0726517X	OSBK			
	T0726517M	CAL491			
1)	70726501		BHI	BOL633	
	R0726501	DUP			

ACTIONS (Initial & Date)

1) INITIATED JH 7/22/97 — SOP(S) # RD7800

2) PREP LAB RECEIVED 7-24-97 DUC — SOP(S) # RCHRFS013-0 RCHRFS017-1

3) SAMPLE REMAINDER STORED 8-7-97 DUC — SOP(S) # n/a

4) SEPARATION LAB RECEIVED — SOP(S) #

5) COUNTING/MEASUREMENT LAB OTAG97 — SOP(S) # RICHR00007

6) DATA REVIEWED AND ANALYTICAL PREP STORED MC 8-20-97 — SOP(S) # RICHRC0002 Rev

N. Addon 15 Aug 00