H0374-TMA/RECRA

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

0051543

JUN 1999 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-006
RFW #: 9904L612
SDG/SAF #: H0374/B99-006

W.O. #: 10985-001-001-9999-00
Date Received: 04-03-99

SEMIVOLATILE

Two (2) oil samples were collected on 03-29-99.

The samples and their associated QC samples were extracted on 04-07-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 04-20,21-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

AUG 1999 RECEIVED EDMC

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. Due to the sample matrix, these samples were extracted according to Waste Dilution Protocol (1 g to 10 mL DCM). All results have been reported on a wet-weight basis.
5. All surrogate recoveries were within EPA QC limits.
6. Three (3) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
7. All blank spike recoveries were within EPA QC limits.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

06-03-99
Date

som\gorup\data\bna\tnu04612.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 04/23/99 15:33

RFW Batch Number: **9904L612** Client: **TNU-HANFORD B99-006** Work Order: 10985001001 Page: 1a

04

	Cust ID:	B0T7W8		B0T7W8		B0T7W8		B0T7X4		SBLKUD		SBLKUD BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		99LE0423-MB1		99LE0423-MB1	
	Matrix:	OIL		OIL		OIL		OIL		SOIL		SOIL	
	D.F.:	20.0		20.0		20.0		20.0		20.0		20.0	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	107	%	98	%	97	%	98	%	108	%	97	%
	2-Fluorobiphenyl	113	%	109	%	106	%	98	%	114	%	100	%
	Terphenyl-d14	105	%	102	%	98	%	98	%	109	%	96	%
	Phenol-d5	88	%	88	%	90	%	90	%	80	%	81	%
	2-Fluorophenol	103	%	100	%	100	%	98	%	97	%	90	%
	2,4,6-Tribromophenol	46	%	58	%	58	%	70	%	49	%	57	%
			fl		fl		fl		fl		fl		fl
Phenol		200000	U	91 *	%	91 *	%	200000	U	200000	U	80	%
bis(2-Chloroethyl)ether		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2-Chlorophenol		200000	U	94	%	93	%	200000	U	200000	U	87	%
1,3-Dichlorobenzene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
1,4-Dichlorobenzene		200000	U	93	%	91	%	200000	U	200000	U	88	%
1,2-Dichlorobenzene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2-Methylphenol		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,2'-oxybis(1-Chloropropane)		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
4-Methylphenol		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
N-Nitroso-di-n-propylamine		200000	U	102	%	101	%	200000	U	200000	U	69	%
Hexachloroethane		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Nitrobenzene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Isophorone		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2-Nitrophenol		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,4-Dimethylphenol		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
bis(2-Chloroethoxy)methane		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,4-Dichlorophenol		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
1,2,4-Trichlorobenzene		200000	U	92	%	89	%	200000	U	200000	U	87	%
Naphthalene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
4-Chloroaniline		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Hexachlorobutadiene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
4-Chloro-3-methylphenol		200000	U	53	%	47	%	200000	U	200000	U	41	%
2-Methylnaphthalene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Hexachlorocyclopentadiene		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,4,6-Trichlorophenol		200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,4,5-Trichlorophenol		500000	U	500000	U	500000	U	500000	U	500000	U	500000	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0T7W8		B0T7W8		B0T7W8		B0T7X4		SBLKUD		SBLKUD BS	
RFW#:	001		001 MS		001 MSD		002		99LE0423-MB1		99LE0423-MB1	
2-Chloronaphthalene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2-Nitroaniline	500000	U	500000	U	500000	U	500000	U	500000	U	500000	U
Dimethylphthalate	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Acenaphthylene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,6-Dinitrotoluene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
3-Nitroaniline	500000	U	500000	U	500000	U	500000	U	500000	U	500000	U
Acenaphthene	200000	U	108	%	97	%	200000	U	200000	U	92	%
2,4-Dinitrophenol	500000	U	500000	U	500000	U	500000	U	500000	U	500000	U
4-Nitrophenol	500000	U	71	%	38	%	500000	U	500000	U	46	%
Dibenzofuran	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
2,4-Dinitrotoluene	200000	U	68	%	67	%	200000	U	200000	U	79	%
Diethylphthalate	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
4-Chlorophenyl-phenylether	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Fluorene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
4-Nitroaniline	500000	U	500000	U	500000	U	500000	U	500000	U	500000	U
4,6-Dinitro-2-methylphenol	500000	U	500000	U	500000	U	500000	U	500000	U	500000	U
N-Nitrosodiphenylamine (1)	13000	J	16000	J	18000	J	200000	U	200000	U	200000	U
4-Bromophenyl-phenylether	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Hexachlorobenzene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Pentachlorophenol	500000	U	82	%	48	%	500000	U	500000	U	21	%
Phenanthrene	18000	J	18000	J	18000	J	200000	U	200000	U	200000	U
Anthracene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Carbazole	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Di-n-butylphthalate	13000	J	12000	J	11000	J	200000	U	200000	U	200000	U
Fluoranthene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Pyrene	200000	U	96	%	27 *	%	200000	U	200000	U	93	%
Butylbenzylphthalate	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
3,3'-Dichlorobenzidine	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Benzo(a)anthracene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Chrysene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
bis(2-Ethylhexyl)phthalate	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Di-n-octyl phthalate	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Benzo(b)fluoranthene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Benzo(k)fluoranthene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Benzo(a)pyrene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Indeno(1,2,3-cd)pyrene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Dibenz(a,h)anthracene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U
Benzo(g,h,i)perylene	200000	U	200000	U	200000	U	200000	U	200000	U	200000	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0T7W8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-006

Matrix: (soil/water) OIL Lab Sample ID: 9904L612-001

Sample wt/vol: 1.00 (g/mL) G Lab File ID: E042010

Level: (low/med) LOW Date Received: 04/03/99

% Moisture: 0 decanted: (Y/N) Date Extracted: 04/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/20/99

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	FROM 18 to 32 min.			
2.	UNRESOLVED HYDROCARBONS			
3.	UNKNOWN	20.09	200000	J
4.	UNKNOWN	26.67	200000	J
5.	UNKNOWN	27.72	300000	J
6.	UNKNOWN	28.17	500000	J
7.	UNKNOWN	29.36	1000000	J
8.	UNKNOWN	30.94	200000	J
9.	UNKNOWN	32.37	200000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0T7X4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-006

Matrix: (soil/water) OIL Lab Sample ID: 9904L612-002

Sample wt/vol: 1.00 (g/mL) G Lab File ID: E042013

Level: (low/med) LOW Date Received: 04/03/99

% Moisture: 0 decanted: (Y/N) __ Date Extracted: 04/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/99

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	22.64	90000	J
2.	UNKNOWN	22.71	90000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKUD

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-006

Matrix: (soil/water) SOIL Lab Sample ID: 99LE0423-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: E042008

Level: (low/med) LOW Date Received: 04/07/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 04/07/99

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/20/99

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 SV-TIC RFW (v3.3)

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0T7W8	001	OI	99LE0423	03/29/99	04/07/99	04/20/99
B0T7W8	001 MS	OI	99LE0423	03/29/99	04/07/99	04/20/99
B0T7W8	001 MSD	OI	99LE0423	03/29/99	04/07/99	04/21/99
B0T7X4	002	OI	99LE0423	03/29/99	04/07/99	04/21/99

LAB QC:

SBLKUD	MB1	S	99LE0423	N/A	04/07/99	04/20/99
SBLKUD	MB1 BS	S	99LE0423	N/A	04/07/99	04/20/99

RECRA LabNet Use Only

9904L612

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) ~~cyanide~~ ~~wet lab~~ ~~metals~~ ~~dig~~ ~~gcms voa~~ ~~BNA~~ (PCB)

Client TNU-Hanford B99-006
Est. Final Proj. Sampling Date
Project # 10985-001-001-9999-00
Project Contact/Phone #
RECRA Project Manager OJ
QC spec Del std TAT 30 days
Date Rec'd 4/3/99 Date Due 5/3/99
Account #

Refrigerator #		1	3	3					3		3		3				
#/Type Container	Liquid	1g	1g	2g					1g		1g		1g				
	Solid																
Volume	Liquid	40	60	60					60		60		120				
	Solid																
Preservatives		-															
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN		leachate					
RECRA LabNet Use Only		0024H	0025H	~~0026~~ 0008H					Met ①		1TCLP	~~[illegible]~~ LEACH	1FLSH				

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025H	0008H	Met ①	1TCLP	LEACH	1FLSH
001	BOT7W8			~~W~~ oil	3/29/99	1040	✓	✓	✓	✓	✓		✓
002	BOT7X4			~~W~~ oil	↓	1145	✓	✓	✓	✓	✓		✓
003	BOT7W8 tclp of 001			L	*	-						✓	
004	BOT7X4 ↓ 2			L	*	-						✓	

4/7/99 OPCB canceled per PM

Special Instructions:

saf # B99-006

4/6/99 matrix changed to oil per unit review

COMPOSITE WASTE

DATE/REVISIONS:

~~Met ① = HSL + Li~~ 4/5/99
* 2. see labchron
3. Run matrix QC
Met ① = 4. Ag, As, Ba, Be, Ca, Cd, Co, Cr, Cu,
5. Fe, K, Li, Mg, Mn, Na, Ni, Sb,
6. V, Zn

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 80939010 2365
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Relinquished by	Received by	Date	Time
Jeeler	Soder	4/3/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-11	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 105/DR		SAF No.: B99-006
Ice Chest No.: SML-206	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.: 8093 9010 2365 (Number for Customer) 5.5
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: 612

Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.
B0T7W8	Other Liquid	3-29-99	1040	X	X	X	X	X	~~X~~	~~X~~ RJN 4/1/99	X	X	~~X~~ RJN 4/1/99
~~B0T7X0~~	~~Other Liquid~~												B0T7W9
~~B0T7X2~~	~~Other Liquid~~	DJB	3-29-99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 3-29-99/1717	Received By: Refs IB @ 3728	Date/Time: 3-29-99/1717
Relinquished By: REF IB @ 3728	Date/Time: 4199 1045	Received By: SJ GALE	Date/Time: 4199 1045
Relinquished By: SJ GALE	Date/Time: 4199 1045	Received By: FED EX	Date/Time:
Relinquished By: Fed ex	Date/Time:	Received By: Fedex	Date/Time: 4/3/99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IB @ 4°C

D BOWERS UNAVAILABLE TO SIGN C.O.C.

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-13	Page 1 of 1

Collector Doug Bowers	Company Contact Dave Smith	Telephone No. 376-3055	Project Coordinator TRENT, SJ	Price Code / Data Turnaround 45 Days
Project Designation 105F & 105DR ISS Project - Other Liquid	Sampling Location 190/DR		SAF No. B99-006	
Ice Chest No. SML-206	Field Logbook No. EFL 1133-7		Method of Shipment Fed Ex	
Shipped To RJN 4/1/99 RECRA ~~TMA/RECRA~~ ~~Thermo Retec~~ RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.	
			COA	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
	Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS		VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0T7X4	Other Liquid	3-25-99	1145	X	X	X	X	X	~~X~~	~~X~~ RJN 4/1/99	X	X	~~X~~ RJN 4/1/99 B0T7X5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 3-29-99/1517	Date/Time	Received By A.F.G. IA@3728 3-29-99/1517	Date/Time
Relinquished By REF IA@3728 4/99 1045	Date/Time	Received By SJGALE 4/99 1045	Date/Time
Relinquished By SJGALE 4/99 1045	Date/Time	Received By FED EX	Date/Time
Relinquished By Fedex	Date/Time	Received By Trader 4/3/99 0930	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IA@ 4°C

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

JUN 1999 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-006
RFW# : 9904L612
SDG/SAF #: H0374/B99-006

W.O. #: 10985-001-001-9999-00
Date Received: 04-03-99

GC/MS VOLATILE

Two (2) oil samples were collected on 03-29-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 04-07,08-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. Samples were analyzed within ten days from sample collect; however, there is no specified holding time for oil matrix.

3. Non-target compounds were detected in sample B0T7X4.

4. Samples B0T7W8 and B0T7X4 required medium level analysis due to the sample matrix. (The forms do not reflect the correct dilution factors due to programming limitations.)

5. All surrogate recoveries were within EPA QC limits.

6. All matrix spike recoveries were within EPA QC limits.

7. All blank spike recoveries were within EPA QC limits.

8. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-23-99
Date

som\group\data\ voa\tnu04612.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

6/3/99

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 04/16/99 16:26

RFW Batch Number: **9904L612** Client: **TNU-HANFORD B99-006** Work Order: 10985001001 Page: 1a

04

	Cust ID:	B0T7W8		B0T7W8		B0T7W8		B0T7X4		B0T7X4		VBLKZE	
Sample Information	RFW#:	001		001 MS		001 MSD		002		002 DL		99LVN115-MB1	
	Matrix:	OIL		OIL		OIL		OIL		OIL		SOIL	
	D.F.:	8.00		8.00		8.00		8.00		16.0		8.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
	Level:	MED		MED		MED		MED		MED		MED	
Surrogate Recovery	Toluene-d8	92	%	94	%	94	%	95	%	84	%	111	%
	Bromofluorobenzene	89	%	93	%	92	%	92	%	81	%	116	%
	1,2-Dichloroethane-d4	94	%	95	%	93	%	92	%	88	%	115	%
Chloromethane		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
Bromomethane		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
Vinyl Chloride		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
Chloroethane		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
Methylene Chloride		2500	U	2500	U	2500	U	590	JB	1800	JBD	1600	J
Acetone		1800	JB	2900	JB	1700	JB	150000	EB	140000	BD	1100	J
Carbon Disulfide		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
1,1-Dichloroethene		2500	U	96	%	93	%	2500	U	5000	U	2500	U
1,1-Dichloroethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
1,2-Dichloroethene (total)		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Chloroform		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
1,2-Dichloroethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
2-Butanone		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
1,1,1-Trichloroethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Carbon Tetrachloride		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Bromodichloromethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
1,2-Dichloropropane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
cis-1,3-Dichloropropene		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Trichloroethene		2500	U	115	%	110	%	2500	U	5000	U	2500	U
Dibromochloromethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
1,1,2-Trichloroethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Benzene		2500	U	113	%	111	%	2500	U	5000	U	2500	U
Trans-1,3-Dichloropropene		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Bromoform		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
4-Methyl-2-pentanone		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
2-Hexanone		5000	U	5000	U	5000	U	5000	U	10000	U	5000	U
Tetrachloroethene		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
1,1,2,2-Tetrachloroethane		2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Toluene		2500	U	116	%	115	%	2500	U	5000	U	2500	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9904L612** Client: **TNU-HANFORD B99-006** Work Order: 10985001001 Page: 1b

05

Cust ID:	B0T7W8		B0T7W8		B0T7W8		B0T7X4		B0T7X4		VBLKZE	
RFW#:	001		001 MS		001 MSD		002		002 DL		99LVN115-MB1	
Level:	MED		MED		MED		MED		MED		MED	
Chlorobenzene	2500	U	115	%	112	%	2500	U	5000	U	2500	U
Ethylbenzene	2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Styrene	2500	U	2500	U	2500	U	2500	U	5000	U	2500	U
Xylene (total)	2500	U	2500	U	2500	U	2500	U	5000	U	2500	U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 04/16/99 16:26

RFW Batch Number: **9904L612** Client: **TNU-HANFORD B99-006** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKZE BS**		**VBLKZF**	
Sample Information	RFW#:	**99LVN115-MB1**		**99LVN117-MB1**	
	Matrix:	SOIL		SOIL	
	D.F.:	8.00		8.00	
	Units:	UG/KG		UG/KG	
	Level:	MED		MED	
Surrogate Recovery	Toluene-d8	103	%	105	%
	Bromofluorobenzene	103	%	103	%
	1,2-Dichloroethane-d4	105	%	106	%
Chloromethane		5000	U	5000	U
Bromomethane		5000	U	5000	U
Vinyl Chloride		5000	U	5000	U
Chloroethane		5000	U	5000	U
Methylene Chloride		520	JB	1400	J
Acetone		1900	JB	3700	J
Carbon Disulfide		2500	U	2500	U
1,1-Dichloroethene		97	%	2500	U
1,1-Dichloroethane		2500	U	2500	U
1,2-Dichloroethene (total)		2500	U	2500	U
Chloroform		2500	U	2500	U
1,2-Dichloroethane		2500	U	2500	U
2-Butanone		5000	U	5000	U
1,1,1-Trichloroethane		2500	U	2500	U
Carbon Tetrachloride		2500	U	2500	U
Bromodichloromethane		2500	U	2500	U
1,2-Dichloropropane		2500	U	2500	U
cis-1,3-Dichloropropene		2500	U	2500	U
Trichloroethene		110	%	2500	U
Dibromochloromethane		2500	U	2500	U
1,1,2-Trichloroethane		2500	U	2500	U
Benzene		110	%	2500	U
Trans-1,3-Dichloropropene		2500	U	2500	U
Bromoform		2500	U	2500	U
4-Methyl-2-pentanone		5000	U	5000	U
2-Hexanone		5000	U	5000	U
Tetrachloroethene		2500	U	2500	U
1,1,2,2-Tetrachloroethane		2500	U	2500	U
Toluene		113	%	2500	U

*= Outside of EPA CLP QC limits.

Cust ID:	**VBLKZE BS**		**VBLKZF**	
RFW#:	**99LVN115-MB1**		**99LVN117-MB1**	
Level:	MED		MED	
Chlorobenzene	110	%	2500	U
Ethylbenzene	2500	U	2500	U
Styrene	2500	U	2500	U
Xylene (total)	2500	U	2500	U

*= Outside of EPA CLP QC limits.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0T7W8

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) OIL Lab Sample ID: 9904L612-001

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040718

Level: (low/med) MED Date Received: 04/03/99

% Moisture: not dec. 0 Date Analyzed: 04/07/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0T7X4

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) OIL Lab Sample ID: 9904L612-002

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040719

Level: (low/med) MED Date Received: 04/03/99

% Moisture: not dec. 0 Date Analyzed: 04/07/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75070	ACETALDEHYDE	4.923	30000	NJ
2. 64175	ETHANOL	7.274	3000	NJ
3. 79209	ACETIC ACID METHYL ESTER	8.701	6000	JN
4. 141786	ETHYL ACETATE	11.564	9000	NJ

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0T7X4DL

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) OIL Lab Sample ID: 9904L612-002 DL

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040809

Level: (low/med) MED Date Received: 04/03/99

% Moisture: not dec. 0 Date Analyzed: 04/08/99

Column: (pack/cap) CAP Dilution Factor: 16.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75070	ACETALDEHYDE	4.922	30000	NJ
2. 79209	ACETIC ACID METHYL ESTER	8.700	6000	JN
3. 141786	ETHYL ACETATE	11.563	9000	NJ

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKZE

Lab Name: Recra,LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN115-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040716

Level: (low/med) MED Date Received: 04/07/99

% Moisture: not dec. 0 Date Analyzed: 04/07/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKZF

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN117-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040808

Level: (low/med) MED Date Received: 04/08/99

% Moisture: not dec. 0 Date Analyzed: 04/08/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 1/87 Rev.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0T7W8	001 M1	OI	99LVN115	03/29/99	N/A	04/07/99
B0T7W8	001 MS M1	OI	99LVN115	03/29/99	N/A	04/07/99
B0T7W8	001 MSD M1	OI	99LVN115	03/29/99	N/A	04/07/99
B0T7X4	002 M1	OI	99LVN115	03/29/99	N/A	04/07/99
B0T7X4	002 M2	OI	99LVN117	03/29/99	N/A	04/08/99

LAB QC:

VBLKZE	MB1	S	99LVN115	N/A	N/A	04/07/99
VBLKZE	MB1 BS	S	99LVN115	N/A	N/A	04/07/99
VBLKZF	MB1	S	99LVN117	N/A	N/A	04/08/99

RECRA LabNet Use Only

9904L612

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) ~~cyanide~~ ~~wet lab~~ ~~metals~~ ~~die~~ ~~gen~~ ~~VOA~~ ~~BNA~~ PCB

RECRA LabNet

Client: TNU-Hanford B99-006

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 days

Date Rec'd: 4/3/99 Date Due: 5/3/99

Account #:

Refrigerator #		1	3	3					3		3		3			
#/Type Container	Liquid	1g	1g	2g					1g		1g		1g			
	Solid															
Volume	Liquid	40	60	60					60		60		120			
	Solid															
Preservatives		-														
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN							

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0U024H	0U025H	~~0U08~~ 0U08H				MeHO		1TCLP	~~BNA~~ leachate	1FLSH
001	B0T7W8			~~W~~ oil	3/29/99	1040	✓	✓	✓				✓		✓		✓
002	B0T7X4			~~W~~ oil	↓	1146	✓	✓	✓				✓		✓		✓
003	B0T7W8 tclp of 001			L	*	-										✓	
004	B0T7X4 ↓ 2			L	*	-										✓	

4/7/99 0POB canceled per PM

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
Wi - Wipe
X - Other
F - Fish

Special Instructions:

saf # B99-006

4/6/99 matrix changed to oil per chrit review

COMPOSITE WASTE

DATE/REVISIONS:

~~Met ① = HSL + Li~~ 4/5/99

* 2. see labchron

3. Run matrix QC

Met ① = 4. Ag, As, Ba, Be, Ca, Cd, Co, Cr, Cu,

5. Fe, K, Li, Mg, Mn, Na, Ni, Sb,

6. V, Zn

Relinquished by	Received by	Date	Time
Jeeler	Soder	4/3/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 80939010 2365
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-006-11

Collector Doug Bowers	**Company Contact** Dave Smith	**Telephone No.** 376-3055	**Project Coordinator** TRENT, SJ
Project Designation 105F & 105DR ISS Project - Other Liquid	**Sampling Location** 105/DR		**SAF No.** B99-006
Ice Chest No. SML-206	**Field Logbook No.** EFL 1133-7		**Method of Shipment** Fed Ex
Shipped To ~~TMA~~/RECRA RJN 4/1/99	**Offsite Property No.**		**Bill of Lading/Air Bill No.** 8093 9010 2365 (Number for Customer) 5.5
			COA

Price Code

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage 6/12

Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0T7W8	Other Liquid	3-29-99	1040	X	X	X	X	X	~~X~~ RJN 4/1/99	~~X~~	X	X	~~X~~ RJN 4/1/99
~~B0T7X0~~	~~Other Liquid~~												B0T7G9
~~B0T7X2~~	~~Other Liquid~~	DJB	3-29-99										

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	3-29-99/1510	Refs IB @ 3728	3-29-99/1510
REF IB @ 3728	4199 1045	SJ GALE	4199 1045
SJ GALE	4199 1045	FED EX	
Fed ex		Fedex	4/3/99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IB @ 4°C

D BOWERS UNAVAILABLE TO SIGN C.O.C.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-13	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 190/DR		SAF No.: B99-006
Ice Chest No.: SML-206	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: RJN 4/1/99 RECRA ~~TMA/RECRA~~ ~~Thermo Re~~ RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0T7X4	Other Liquid	3-25-99	1145	X	X	X	X	X	~~X~~	~~X~~ RJN 4/1/99	X	X	~~X~~ RJN 4/1/99 B0T7X5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers Doug Bowers	3-29-99/1517	A. Fg. IA@3725	3-29-99/1517
REF IA@3725	4199 1045	SJGALE	4/99 1045
SJGALE	4/99 1045	FED EX	
Jeffery		Fedex	4/3/99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IA @ 4°C

Matrix *: Soil; Water; Vapor; Other Solid; Other Liquid

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

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

JUN
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-006
RFW#: 9904L612
SDG/SAF#: H0374/B99-006

W.O.#: 10985-001-001-9999-00
Date Received: 04-03-99

PESTICIDE/PCB

The set of samples consisted of two (2) oil samples collected on 03-29-99.

The samples and their associated QC samples were extracted on 04-07-99 and analyzed based on SW846, 3rd Edition on 04-13-99. The extraction procedure was based on method 3580A (Waste Dilution, 1g into 10 mLs hexane) and the extracts were analyzed based on method 8081.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All obtainable surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. Matrix spike recoveries were unobtainable due to the dilution required for analysis.
7. Sample B0T7W8, the matrix spike, and the matrix spike duplicate required twenty-fold instrument dilutions due to chromatographic anomalies. Reporting limits have been adjusted to reflect the necessary dilutions.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-20-99
Date

pef\r:\group\data\pcb\04L-612.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

Pesticide/PCBs by GC, CLP List

Report Date: 04/13/99 15:44

RFW Batch Number: **9904L612** Client: **TNU-HANFORD B99-006** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0T7W8		B0T7W8		B0T7W8		B0T7X4		PBLKHI		PBLKHI BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		99LE0422-MB1		99LE0422-MB1	
	Matrix:	OIL		OIL		OIL		OIL		OIL		OIL	
	D.F.:	20.0		20.0		20.0		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Decachlorobiphenyl	D	%	D	%	D	%	91	%	85	%	81	%
	Tetrachloro-m-xylene	D	%	D	%	D	%	100	%	92	%	88	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		1000	U	1000	U	1000	U	50	U	50	U	50	U
Beta-BHC		1000	U	1000	U	1000	U	50	U	50	U	50	U
Delta-BHC		1000	U	1000	U	1000	U	50	U	50	U	50	U
gamma-BHC (Lindane)		1000	U	D	%	D	%	50	U	50	U	85	%
Heptachlor		1000	U	D	%	D	%	50	U	50	U	95	%
Aldrin		1000	U	D	%	D	%	50	U	50	U	95	%
Heptachlor epoxide		1000	U	1000	U	1000	U	50	U	50	U	50	U
Endosulfan I		1000	U	1000	U	1000	U	50	U	50	U	50	U
Dieldrin		2000	U	D	%	D	%	100	U	100	U	96	%
4,4'-DDE		2000	U	2000	U	2000	U	100	U	100	U	100	U
Endrin		2000	U	D	%	D	%	100	U	100	U	116	%
Endosulfan II		2000	U	2000	U	2000	U	100	U	100	U	100	U
4,4'-DDD		2000	U	2000	U	2000	U	100	U	100	U	100	U
Endosulfan sulfate		2000	U	2000	U	2400		100	U	100	U	100	U
4,4'-DDT		2000	U	D	%	D	%	100	U	100	U	92	%
Methoxychlor		10000	U	10000	U	10000	U	500	U	500	U	500	U
Endrin ketone		2000	U	2000	U	2000	U	100	U	100	U	100	U
Endrin aldehyde		2000	U	2000	U	2000	U	100	U	100	U	100	U
alpha-Chlordane		1000	U	1000	U	1000	U	50	U	50	U	50	U
gamma-Chlordane		1000	U	1000	U	1000	U	50	U	50	U	50	U
Toxaphene		100000	U	100000	U	100000	U	5000	U	5000	U	5000	U
Aroclor-1016		20000	U	20000	U	20000	U	1000	U	1000	U	1000	U
Aroclor-1221		40000	U	40000	U	40000	U	2000	U	2000	U	2000	U
Aroclor-1232		20000	U	20000	U	20000	U	1000	U	1000	U	1000	U
Aroclor-1242		20000	U	20000	U	20000	U	1000	U	1000	U	1000	U
Aroclor-1248		20000	U	20000	U	20000	U	1000	U	1000	U	1000	U
Aroclor-1254		20000	U	20000	U	20000	U	1000	U	1000	U	1000	U
Aroclor-1260		20000	U	20000	U	20000	U	1000	U	1000	U	1000	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

GV 04-15-99

Recra LabNet - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0T7W8	001	OI	99LE0422	03/29/99	04/07/99	04/13/99
B0T7W8	001 MS	OI	99LE0422	03/29/99	04/07/99	04/13/99
B0T7W8	001 MSD	OI	99LE0422	03/29/99	04/07/99	04/13/99
B0T7X4	002	OI	99LE0422	03/29/99	04/07/99	04/13/99
LAB QC:						
PBLKHI	MB1	OI	99LE0422	N/A	04/07/99	04/13/99
PBLKHI	MB1 BS	OI	99LE0422	N/A	04/07/99	04/13/99

gw 04-15-99

RECRA LabNet Use Only

9904L612

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) ~~[illegible] wet lab metals~~ ~~dig gen/voa BNA~~ (PCB)

Client: INU-Hanford B99-006
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 4/3/99 Date Due: 5/3/99
Account #:

Refrigerator #		1	3	3					3		3		3			
#/Type Container	Liquid	1qt	1qt	2qt					1qt		1qt		1qt			
	Solid															
Volume	Liquid	40	60	60					60		60	leachate	120			
	Solid															
Preservatives		-														
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
RECRA LabNet Use Only		OC94H	0025H	~~[illegible]~~	0008H				Met-D		1TCLP	~~[illegible]~~ LEACH	1FLSH			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	BØT7W8			~~W~~ oil	3/29/99	1040
	002	BØT7X4			~~W~~ oil	↓	1145
	003	BØT7W8 tclp of 001			L	*	-
	004	BØT7X4 ↓ 2			L	*	-

4/7/99 OPCB canceled per PM

Special Instructions:

saf # B99-006

4/6/99 matrix changed to oil per unit review

COMPOSITE WASTE

DATE/REVISIONS:

~~Met-D = HSL + Li~~ 4/5/99
* 2. see labchron
3. Run matrix QC
Met-D = 4. Ag, Al, Ba, Be, Ca, Cd, Co, Cr, Cu,
5. Fe, K, Li, Mg, Mn, Na, Ni, Sb,
6. V, Zn

Relinquished by	Received by	Date	Time
Jeeled	Soder	4/3/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 80939010 2365
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RECRA
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-006
RFW# : 9904L612
SDG/SAF# : H0374/B99-006

W.O.# : 10985-001-001-9999-00
Date Received: 04-03-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 oil samples and 2 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Ten fold dilutions were performed on the the TCLP metals with the exception of Silver, Mercury, and Barium due to the sample matrix.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value and for TCLP the MB result is less than 5% of the RCRA limit } with the exception of 99L0235-MB1 for Chromium and Sodium. Refer to the Inorganics Method Blank Data Summary.

   a.) The MB results for Chromium and Sodium were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and both total samples for Chromium and sample B0T7W8 (total) for Sodium read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

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10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analyses for 6 analytes for sample B0T7W8 and 1 analyte for the TCLP analysis of the same sample were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-30-99
Date

mld/m04-612

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9904L612

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A ✓3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	✓6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ **Method:**_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0T7W8	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	1.6 u	MG/KG	1.6	1.0
		Barium, Total	0.13	MG/KG	0.009	1.0
		Beryllium, Total	0.009u	MG/KG	0.009	1.0
		Calcium, Total	12.8	MG/KG	0.62	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.06 u	MG/KG	0.06	1.0
		Chromium, Total	0.32	MG/KG	0.06	1.0
		Copper, Total	61.3	MG/KG	0.08	1.0
		Iron, Total	15.6	MG/KG	1.6	1.0
		Potassium, Total	1.6	MG/KG	1.1	1.0
		Lithium, Total	0.16	MG/KG	0.05	1.0
		Magnesium, Total	1.6	MG/KG	0.57	1.0
		Manganese, Total	0.15	MG/KG	0.02	1.0
		Sodium, Total	16.4	MG/KG	0.30	1.0
		Nickel, Total	0.38	MG/KG	0.10	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	1.3	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006 RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B0T7X4	Silver, Total	0.09	u	MG/KG	0.09	1.0
		Aluminum, Total	1.7	u	MG/KG	1.7	1.0
		Barium, Total	0.04		MG/KG	0.01	1.0
		Beryllium, Total	0.01	u	MG/KG	0.01	1.0
		Calcium, Total	16.0		MG/KG	0.66	1.0
		Cadmium, Total	0.04	u	MG/KG	0.04	1.0
		Cobalt, Total	0.06	u	MG/KG	0.06	1.0
		Chromium, Total	0.17		MG/KG	0.06	1.0
		Copper, Total	0.34		MG/KG	0.09	1.0
		Iron, Total	510		MG/KG	1.7	1.0
		Potassium, Total	6.1		MG/KG	1.1	1.0
		Lithium, Total	0.07		MG/KG	0.05	1.0
		Magnesium, Total	28.7		MG/KG	0.60	1.0
		Manganese, Total	2.0		MG/KG	0.02	1.0
		Sodium, Total	1080		MG/KG	0.32	1.0
		Nickel, Total	0.11	u	MG/KG	0.11	1.0
		Antimony, Total	0.22	u	MG/KG	0.22	1.0
		Vanadium, Total	0.06	u	MG/KG	0.06	1.0
		Zinc, Total	0.31		MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006 RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0T7W8	Silver, TCLP Leachate	3.1	u	UG/L	3.1	1.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	110		UG/L	2.3	1.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	50.0		UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B0T7X4	Silver, TCLP Leachate	3.1	u	UG/L	3.1	1.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	76.5		UG/L	2.3	1.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/29/99

CLIENT: TNU-HANFORD B99-006 RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0235-MB1	Silver, Total	0.09	u	MG/KG	0.09	1.0
		Aluminum, Total	1.8	u	MG/KG	1.8	1.0
		Barium, Total	0.02		MG/KG	0.01	1.0
		Beryllium, Total	0.01	u	MG/KG	0.01	1.0
		Calcium, Total	1.7		MG/KG	0.68	1.0
		Cadmium, Total	0.04	u	MG/KG	0.04	1.0
		Cobalt, Total	0.06	u	MG/KG	0.06	1.0
		Chromium, Total	0.26		MG/KG	0.06	1.0
		Copper, Total	0.09	u	MG/KG	0.09	1.0
		Iron, Total	1.8	u	MG/KG	1.8	1.0
		Potassium, Total	1.2	u	MG/KG	1.2	1.0
		Lithium, Total	0.06		MG/KG	0.05	1.0
		Magnesium, Total	0.62	u	MG/KG	0.62	1.0
		Manganese, Total	0.02	u	MG/KG	0.02	1.0
		Sodium, Total	1.1		MG/KG	0.33	1.0
		Nickel, Total	0.11	u	MG/KG	0.11	1.0
		Antimony, Total	0.23	u	MG/KG	0.23	1.0
		Vanadium, Total	0.06	u	MG/KG	0.06	1.0
		Zinc, Total	0.08	u	MG/KG	0.08	1.0
BLANK1	99L0229-MB1	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	1.4		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK2	99L0229-MB2	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	16.2		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK3	99L0229-MB3	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	122		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/29/99

CLIENT: TNU-HANFORD B99-006 RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	99L0229-MB3	Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK4	99L0229-MB4	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	42.6		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK5	99L0229-MB5	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	67.1		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK1	99C0107-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	99C0107-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

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INORGANICS ACCURACY REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0T7W8	Silver, Total	4.4	0.08u	4.7	93.6	1.0
		Aluminum, Total	175	1.6 u	187	93.5	1.0
		Barium, Total	173	0.13	187	92.3	1.0
		Beryllium, Total	4.5	0.00u	4.7	95.7	1.0
		Calcium, Total	2350	12.8	2340	100	1.0
		Cadmium, Total	4.6	0.04u	4.7	97.9	1.0
		Cobalt, Total	45.4	0.06u	46.8	97.0	1.0
		Chromium, Total	18.7	0.32	18.7	98.3	1.0
		Copper, Total	85.2	61.3	23.4	102.1	1.0
		Iron, Total	106	15.6	93.5	96.1	1.0
		Potassium, Total	2170	1.6	2340	92.6	1.0
		Lithium, Total	92.4	0.16	93.5	98.7	1.0
		Magnesium, Total	2290	1.6	2340	98.0	1.0
		Manganese, Total	46.4	0.15	46.8	98.8	1.0
		Sodium, Total	2120	16.4	2340	90.2	1.0
		Nickel, Total	44.5	0.38	46.8	94.3	1.0
		Antimony, Total	44.5	0.21u	46.8	95.1	1.0
		Vanadium, Total	46.2	0.06u	46.8	98.7	1.0
		Zinc, Total	44.7	1.3	46.8	92.7	1.0

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INORGANICS ACCURACY REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B0T7W8	Silver, TCLP Leachate	3690	3.1 u	5000	73.8	2.0
		Arsenic, TCLP Leachate	4970	33.0 u	5000	99.4	10.0
		Barium, TCLP Leachate	99300	110	100000	99.2	2.0
		Cadmium, TCLP Leachate	990	4.0 u	1000	99.0	10.0
		Chromium, TCLP Leachat	4650	6.0 u	5000	93.1	10.0
		Mercury, TCLP Leachate	192	0.10u	200	96.0	50.0
		Lead, TCLP Leachate	4960	50.0	5000	98.2	10.0
		Selenium, TCLP Leachat	995	36.0 u	1000	99.5	10.0

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INORGANICS PRECISION REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0T7W8	Silver, Total	0.08u	0.09u	NC	1.0
		Aluminum, Total	1.6 u	1.7 u	NC	1.0
		Barium, Total	0.13	0.12	1.7	1.0
		Beryllium, Total	0.00u	0.01u	NC	1.0
		Calcium, Total	12.8	11.9	7.3	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Cobalt, Total	0.06u	0.06u	NC	1.0
		Chromium, Total	0.32	0.15	70.4	1.0
		Copper, Total	61.3	59.8	2.5	1.0
		Iron, Total	15.6	11.7	28.6	1.0
		Potassium, Total	1.6	2.5	43.9	1.0
		Lithium, Total	0.16	0.13	21.7	1.0
		Magnesium, Total	1.6	1.8	11.8	1.0
		Manganese, Total	0.15	0.18	19.2	1.0
		Sodium, Total	16.4	18.7	13.1	1.0
		Nickel, Total	0.38	0.16	79.7	1.0
		Antimony, Total	0.21u	0.23u	NC	1.0
		Vanadium, Total	0.06u	0.06u	NC	1.0
		Zinc, Total	1.3	0.87	39.9	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	B0T7W8	Silver, TCLP Leachate	3.1 u	3.1 u	NC	1.0
		Arsenic, TCLP Leachate	33.0 u	33.0 u	NC	10.0
		Barium, TCLP Leachate	110	107	2.8	1.0
		Cadmium, TCLP Leachate	4.0 u	4.0 u	NC	10.0
		Chromium, TCLP Leachate	6.0 u	6.2	~~NC~~ 200	10.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Lead, TCLP Leachate	50.0	55.2	9.9	10.0
		Selenium, TCLP Leachate	36.0 u	36.0 u	NC	10.0

Correction ND 4/29/99

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/29/99

CLIENT: TNU-HANFORD B99-006

RECRA LOT #: 9904L612

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0235-LC1	Silver, LCS	49.0	50.0	MG/KG	98.0
		Aluminum, LCS	476	500	MG/KG	95.3
		Barium, LCS	481	500	MG/KG	96.2
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Calcium, LCS	2490	2500	MG/KG	99.7
		Cadmium, LCS	24.4	25.0	MG/KG	97.6
		Cobalt, LCS	245	250	MG/KG	97.9
		Chromium, LCS	49.8	50.0	MG/KG	99.6
		Copper, LCS	122	125	MG/KG	97.6
		Iron, LCS	504	500	MG/KG	100.8
		Potassium, LCS	2400	2500	MG/KG	95.9
		Lithium, LCS	492	500	MG/KG	98.4
		Magnesium, LCS	2440	2500	MG/KG	97.8
		Manganese, LCS	75.5	75.0	MG/KG	100.7
		Sodium, LCS	2320	2500	MG/KG	92.7
		Nickel, LCS	193	200	MG/KG	96.3
		Antimony, LCS	287	300	MG/KG	95.7
		Vanadium, LCS	252	250	MG/KG	101.0
		Zinc, LCS	95.4	100	MG/KG	95.4
LCS1	99L0229-LC1	Silver, LCS	476	500	UG/L	95.2
		Arsenic, LCS	9850	10000	UG/L	98.5
		Barium, LCS	4720	5000	UG/L	94.4
		Cadmium, LCS	250	250	UG/L	99.9
		Chromium, LCS	492	500	UG/L	98.4
		Lead, LCS	2500	2500	UG/L	99.8
		Selenium, LCS	9760	10000	UG/L	97.6
LCS1	99C0107-LC1	Mercury, LCS	5.2	5.0	UG/L	104.2

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0T7W8						
TCLP	001	OI	99LT0038	03/29/99	04/07/99	04/08/99
SILVER, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
SILVER, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
SILVER, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
ALUMINUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
ALUMINUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
ALUMINUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
BARIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
BARIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
BARIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
BERYLLIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
BERYLLIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
BERYLLIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
CALCIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
CALCIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
CALCIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
CADMIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
CADMIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
CADMIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
COBALT, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
COBALT, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
COBALT, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
CHROMIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
CHROMIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
CHROMIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
COPPER, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
COPPER, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
COPPER, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
IRON, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
IRON, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
IRON, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
POTASSIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
POTASSIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
POTASSIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
LITHIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LITHIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
LITHIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
MAGNESIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
MAGNESIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
MAGNESIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
MANGANESE, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
MANGANESE, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
MANGANESE, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
SODIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
SODIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
SODIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
NICKEL, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
NICKEL, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
NICKEL, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
ANTIMONY, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
ANTIMONY, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
ANTIMONY, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
VANADIUM, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
VANADIUM, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
VANADIUM, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
ZINC, TOTAL	001	OI	99L0235	03/29/99	04/23/99	04/24/99
ZINC, TOTAL	001 REP	OI	99L0235	03/29/99	04/23/99	04/24/99
ZINC, TOTAL	001 MS	OI	99L0235	03/29/99	04/23/99	04/24/99
B0T7X4						
TCLP	002	OI	99LTO038	03/29/99	04/07/99	04/08/99
SILVER, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
ALUMINUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
BARIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
BERYLLIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
CALCIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
CADMIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
COBALT, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
CHROMIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
COPPER, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
IRON, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
POTASSIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LITHIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
MAGNESIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
MANGANESE, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
SODIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
NICKEL, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
ANTIMONY, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
VANADIUM, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
ZINC, TOTAL	002	OI	99L0235	03/29/99	04/23/99	04/24/99
B0T7W8						
SILVER, TCLP LEACHAT	003	W	99L0229	04/08/99	04/21/99	04/27/99
SILVER, TCLP LEACHAT	003 REP	W	99L0229	04/08/99	04/21/99	04/27/99
SILVER, TCLP LEACHAT	003 MS	W	99L0229	04/08/99	04/21/99	04/27/99
ARSENIC, TCLP LEACHA	003	W	99L0229	04/08/99	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	003 REP	W	99L0229	04/08/99	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	003 MS	W	99L0229	04/08/99	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	003	W	99L0229	04/08/99	04/21/99	04/27/99
BARIUM, TCLP LEACHAT	003 REP	W	99L0229	04/08/99	04/21/99	04/27/99
BARIUM, TCLP LEACHAT	003 MS	W	99L0229	04/08/99	04/21/99	04/27/99
CADMIUM, TCLP LEACHA	003	W	99L0229	04/08/99	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	003 REP	W	99L0229	04/08/99	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	003 MS	W	99L0229	04/08/99	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	003	W	99L0229	04/08/99	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	003 REP	W	99L0229	04/08/99	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	003 MS	W	99L0229	04/08/99	04/21/99	04/26/99
MERCURY, TCLP LEACHA	003	W	99C0107	04/08/99	04/16/99	04/16/99
MERCURY, TCLP LEACHA	003 REP	W	99C0107	04/08/99	04/16/99	04/16/99
MERCURY, TCLP LEACHA	003 MS	W	99C0107	04/08/99	04/16/99	04/16/99
LEAD, TCLP LEACHATE	003	W	99L0229	04/08/99	04/21/99	04/26/99
LEAD, TCLP LEACHATE	003 REP	W	99L0229	04/08/99	04/21/99	04/26/99
LEAD, TCLP LEACHATE	003 MS	W	99L0229	04/08/99	04/21/99	04/26/99
SELENIUM, TCLP LEACH	003	W	99L0229	04/08/99	04/21/99	04/26/99
SELENIUM, TCLP LEACH	003 REP	W	99L0229	04/08/99	04/21/99	04/26/99
SELENIUM, TCLP LEACH	003 MS	W	99L0229	04/08/99	04/21/99	04/26/99
B0T7X4						
SILVER, TCLP LEACHAT	004	W	99L0229	04/08/99	04/21/99	04/27/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	004	W	99L0229	04/08/99	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	004	W	99L0229	04/08/99	04/21/99	04/27/99
CADMIUM, TCLP LEACHA	004	W	99L0229	04/08/99	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	004	W	99L0229	04/08/99	04/21/99	04/26/99
MERCURY, TCLP LEACHA	004	W	99C0107	04/08/99	04/16/99	04/16/99
LEAD, TCLP LEACHATE	004	W	99L0229	04/08/99	04/21/99	04/26/99
SELENIUM, TCLP LEACH	004	W	99L0229	04/08/99	04/21/99	04/26/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
SILVER, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
ALUMINUM LABORTORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
ALUMINUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
BARIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
BARIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
BERYLLIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
CALCIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
CALCIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
CADMIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
CADMIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
COBALT LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
COBALT, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
CHROMIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
CHROMIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
COPPER LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
COPPER, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
IRON LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
IRON, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
POTASSIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
POTASSIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
LITHIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
LITHIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
MAGNESIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
MAGNESIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
MANGANESE LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
MANGANESE, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
SODIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
NICKEL LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
NICKEL, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
ANTIMONY LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
ANTIMONY, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
VANADIUM LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
VANADIUM, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
ZINC LABORATORY	LC1 BS	S	99L0235	N/A	04/23/99	04/24/99
ZINC, TOTAL	MB1	S	99L0235	N/A	04/23/99	04/24/99
SILVER LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
SILVER, TCLP LEACHAT	MB1	W	99L0229	N/A	04/21/99	04/26/99
SILVER, TCLP LEACHAT	MB2	W	99L0229	N/A	04/21/99	04/26/99
SILVER, TCLP LEACHAT	MB3	W	99L0229	N/A	04/21/99	04/26/99
SILVER, TCLP LEACHAT	MB4	W	99L0229	N/A	04/21/99	04/26/99
SILVER, TCLP LEACHAT	MB5	W	99L0229	N/A	04/21/99	04/26/99
ARSENIC LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	MB1	W	99L0229	N/A	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	MB2	W	99L0229	N/A	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	MB3	W	99L0229	N/A	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	MB4	W	99L0229	N/A	04/21/99	04/26/99
ARSENIC, TCLP LEACHA	MB5	W	99L0229	N/A	04/21/99	04/26/99
BARIUM LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	MB1	W	99L0229	N/A	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	MB2	W	99L0229	N/A	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	MB3	W	99L0229	N/A	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	MB4	W	99L0229	N/A	04/21/99	04/26/99
BARIUM, TCLP LEACHAT	MB5	W	99L0229	N/A	04/21/99	04/26/99
CADMIUM LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	MB1	W	99L0229	N/A	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	MB2	W	99L0229	N/A	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	MB3	W	99L0229	N/A	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	MB4	W	99L0229	N/A	04/21/99	04/26/99
CADMIUM, TCLP LEACHA	MB5	W	99L0229	N/A	04/21/99	04/26/99
CHROMIUM LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	MB1	W	99L0229	N/A	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	MB2	W	99L0229	N/A	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	MB3	W	99L0229	N/A	04/21/99	04/26/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TCLP LEACH	MB4	W	99L0229	N/A	04/21/99	04/26/99
CHROMIUM, TCLP LEACH	MB5	W	99L0229	N/A	04/21/99	04/26/99
MERCURY LABORATORY	LC1 BS	W	99C0107	N/A	04/16/99	04/16/99
MERCURY, TOTAL	MB1	W	99C0107	N/A	04/16/99	04/16/99
MERCURY, TCLP LEACHA	MB2	W	99C0107	N/A	04/16/99	04/16/99
LEAD LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
LEAD, TCLP LEACHATE	MB1	W	99L0229	N/A	04/21/99	04/26/99
LEAD, TCLP LEACHATE	MB2	W	99L0229	N/A	04/21/99	04/26/99
LEAD, TCLP LEACHATE	MB3	W	99L0229	N/A	04/21/99	04/26/99
LEAD, TCLP LEACHATE	MB4	W	99L0229	N/A	04/21/99	04/26/99
LEAD, TCLP LEACHATE	MB5	W	99L0229	N/A	04/21/99	04/26/99
SELENIUM LABORATORY	LC1 BS	W	99L0229	N/A	04/21/99	04/26/99
SELENIUM, TCLP LEACH	MB1	W	99L0229	N/A	04/21/99	04/26/99
SELENIUM, TCLP LEACH	MB2	W	99L0229	N/A	04/21/99	04/26/99
SELENIUM, TCLP LEACH	MB3	W	99L0229	N/A	04/21/99	04/26/99
SELENIUM, TCLP LEACH	MB4	W	99L0229	N/A	04/21/99	04/26/99
SELENIUM, TCLP LEACH	MB5	W	99L0229	N/A	04/21/99	04/26/99

RECRA LabNet Use Only

9904L612

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab metals dig gens VOA PCB BNA

Client: TNU-Hanford B99-006
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 4/3/99 Date Due: 5/3/99
Account #:

Refrigerator #		1	3	3					3		3		3			
#/Type Container	Liquid	1q	1q	2q					1q		1q		1q			
	Solid															
Volume	Liquid	40	40	40					40		40		120			
	Solid															
Preservatives		-														
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
RECRA LabNet Use Only																
		OC24H	OC25H	OPCB OC08H					Met D		1TCLP	~~BNA~~ Leach	1FLSH			

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OC24H	OC25H	OPCB OC08H	Met D	1TCLP	~~BNA~~ Leach	1FLSH
001	BOT7W8			~~W~~ oil	3/29/99	1040	✓	✓	✓	✓	✓		✓
002	BOT7X4			~~W~~ oil	↓	1146	✓	✓	✓	✓	✓		✓
003	BOT7W8 trip of 001			L	*	-						✓	
004	BOT7X4 ↓ 2			L	*	-						✓	

Special Instructions:

saf # B99-006

4/6/99 matrix changed to oil per unit review

COMPOSITE WASTE

022

DATE/REVISIONS:

~~Met D = HSL + Li~~ 4/5/99
* 2. see labchron
3. Run matrix QC
Met D = 4. Ag, Al, Ba, Be, Ca, Cd, Co, Cr, Cu,
5. Fe, K, Li, Mg, Mn, Na, Ni, Sb,
6. V, Zn

Relinquished by	Received by	Date	Time
Jeel Lee	Joder	4/3/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # 809390102365
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Property Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-11	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 105/DR		SAF No.: B99-006
Ice Chest No.: SML-206	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.: 8093 9010 2365 (Number for Customer) 5.5
			COA

Price Code: | Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: 612

Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
B0T7W8	Other Liquid	3-29-99	1040	X	X	X	X	X	~~X~~	~~X~~ RJN 4/1/99	X	X	~~X~~ RJN 4/1/99
~~B0T7X0~~	~~Other Liquid~~												B0T7W9
~~B0T7X2~~	~~Other Liquid~~	~~B0T~~	9429-99										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	3-29-99/1517	Doug Bowers IB @ 3724	3-29-99/1517
RFF IB @ 3728	4199 1045	SJ GALE	4199 1045
SJ GALE	4199 1045	FED EX	
		Fedex	4/3/99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IB @ 4°C

D BOWERS UNAVAILABLE TO SIGN C.O.C.

Matrix *: Soil; Water; Vapor; Other Solid; Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-13	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 190/DR		SAF No.: B99-006
Ice Chest No.: SML-206	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: RJN 4/1/99 RECRA ~~TMA/RECRA~~ ~~Thermo Retec~~ RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time								
B0T7X4	Other Liquid	3-25-99	1145	X	X	X	X	X	~~X~~	~~X~~ RJN 4/1/99	X	X	~~X~~ RJN 4/1/99 B0T7X5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers 3-29-99/1517	Date/Time	Received By: D.E.S. IA@3728 3-29-99/1517	Date/Time
Relinquished By: REF IA@3728 4199 1045	Date/Time	Received By: SJOALE 4/99 1045	Date/Time
Relinquished By: SJOALE 4/99 1045	Date/Time	Received By: FED EX	Date/Time
Relinquished By: Jeffery	Date/Time	Received By: Fowler 4/3/99 0930	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IA@ 4°C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

824

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-006
RFW# : 9904L612
SDG# : H0374
SAF# : B99-006

W.O. # : 10985-001-001-9999-00
Date Received: 04-03-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analysis of 2 oil samples.

2. The samples were prepared and analyzed in accordance with the method checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain-of-custody.

6. The Laboratory Control Sample (LCS) was within the laboratory control limits.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-14-99
Date

njp\i04-612

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID* SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			__ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod)__ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		✓ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: _____ Method: _____

002

RWW 21-21-034/B-08/95

*Oil samples

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet Philadelphia
Inorganics Data Summary Report
Physical Testing Observations

Client : TNU-HANFORD B99-006
RFW# : 9904L612

W.O. #: 10985-001-001-9999-00
Date Received: 04-03-99

Analyte:

Flash Point

Observation:

No Flash Point observed for samples B0T7W8 and B0T7X4.

The samples were heated to 220°F.

Xylene was used to determine the accuracy of the flash point apparatus. The Xylene will flash at 81°F +/-2°F. For this test, the Xylene flashed at 81°F.

njp\pt612.p2

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-006

DATE RECEIVED: 04/03/99 RFW LOT # :9904L612

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0T7W8						
FLASH POINT	001	OI	99LFP008	03/29/99	04/24/99	04/24/99
TCLP	001	OI	99LTO038	03/29/99	04/07/99	04/08/99
B0T7X4						
FLASH POINT	002	OI	99LFP008	03/29/99	04/24/99	04/24/99
TCLP	002	OI	99LTO038	03/29/99	04/07/99	04/08/99

RECRA LabNet Use Only
9904L612

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet lab metals; dig gcms VOA PCB BNA

RECRA LabNet

Client: TNU-Hanford B99-006
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 4/3/99 Date Due: 5/3/99
Account #:

Refrigerator #		1	3	3					3		3		3			
#/Type Container	Liquid	1qs	1qs	2qs					1qs		1qs		1qs			
	Solid															
Volume	Liquid	40	60	60					60		60	40	120			
	Solid															
Preservatives		-														
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OU24H	OU25H	OU08H					Met①		1TCLP		1FISH			
S - Soil	001	BØT7W8			~~oil~~	3/29/99	1040	✓	✓	✓					✓		✓		✓			
SE - Sediment	002	BØT7X4			~~oil~~	⊥	1145	✓	✓	✓					✓		✓		✓			
SO - Solid	003	BØT7W8 tclp of 001			L	*	-											✓				
SL - Sludge	004	BØT7X4 ⊥ 2			L	*	-											✓				
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

saf # B99-006

4/6/99 matrix changed to oil per unit review

COMPOSITE WASTE

DATE/REVISIONS:

1. ~~Met① = HSL + Li~~ 4/5/99
2. * see labchron
3. Run matrix QC
4. Met① = Ag, Al, Ba, Be, Ca, Cd, Co, Cr, Cu,
5. Fe, K, Li, Mg, Mn, Na, Ni, Sb,
6. V, Zn

Relinquished by	Received by	Date	Time
Jeeler	Soder	4/3/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 80939010 2365
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

006

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-11	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Price Code: 400	Data Turnaround: 45 Days		
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 105/DR		SAF No.: B99-006
Ice Chest No.: SML-206	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.: 8093 9010 2365 (Number for Customer) 5.5
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: 612

SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions
Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL

Sample No.	Matrix *	Sample Date	Sample Time	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions
B0T7W8	Other Liquid	3-29-99	1040	X	X	X	X	X	~~X~~ RJN 4/1/99	~~X~~	X	X	~~X~~ RJN 4/1/99
~~B0T7X0~~	~~Other Liquid~~												B0T7W9
~~B0T7X2~~	~~Other Liquid~~	~~3-29-99~~	~~1429-99~~										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: DOUG BOWERS / Doug Bowers	Date/Time: 3-29-99/1717	Received By: REF IB @ 3728	Date/Time: 3-29-99/1717
Relinquished By: REF IB @ 3728	Date/Time: 4199 1045	Received By: SJ GALE	Date/Time: 4199 1045
Relinquished By: SJ GALE	Date/Time: 4199 1045	Received By: FED EX	Date/Time:
Relinquished By: Fed ex	Date/Time:	Received By: Fedex	Date/Time: 4/3/99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IB @ 4°C

D BOWERS UNAVAILABLE TO SIGN C.O.C.

Matrix *: Soil; Water; Vapor; Other Solid; Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-13	Page 1 of 1

Collector Doug Bowers	Company Contact Dave Smith	Telephone No. 376-3055	Project Coordinator TRENT, SJ	Price Code / Data Turnaround 45 Days
Project Designation 105F & 105DR ISS Project - Other Liquid	Sampling Location 190/DR		SAF No. B99-006	
Ice Chest No. SML-206	Field Logbook No. EFL 1133-7		Method of Shipment Fed Ex	
Shipped To RJN 4/1/99 RECRA ~~TMA/RECRA~~ ~~Thermo Retec~~ RJN 4/1/99	Offsite Property No.		Bill of Lading/Air Bill No.	
			COA	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
	Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS		VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lithium}	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0T7X4	Other Liquid	3-29-99	1145	X	X	X	X	X	~~X~~	~~X~~ RJN 4/1/99	X	X	~~X~~ RJN 4/1/99 B0T7X5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 3-29-99/1517	Received By REF IA @ 3726	Date/Time 3-29-99/1517
Relinquished By REF IA @ 3726	Date/Time 4/99 1045	Received By SJGALE	Date/Time 4/99 1045
Relinquished By SJGALE	Date/Time 4/99 1045	Received By FED EX	Date/Time
Relinquished By Jeffey	Date/Time	Received By Fedex	Date/Time 4/3/99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

in IA @ 4°C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0374 is comprised of two liquid samples designated under SAF No. B99-006 with a Project Designation of: 105F & 105R ISS Project - Other Liquid.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. All results were reported by fax on May 24, 1999..

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the processing of the samples.

2.2 Gamma Scan Analyses

No problems were encountered during the processing of the samples.

JUN 1999
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

SAMPLE SUMMARY

SDG 7109
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0374

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0T7W8	105/DR	LIQUID		N904022-01	B99-006	B99-006-11	03/29/99 10:40
B0T7X4	105/DR	LIQUID		N904022-02	B99-006	B99-006-13	03/29/99 11:45
Method Blank		LIQUID		N904022-04	B99-006		
Lab Control Sample		LIQUID		N904022-03	B99-006		
Duplicate (N904022-01)	105/DR	LIQUID		N904022-05	B99-006		03/29/99 10:40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

QC SUMMARY

SDG 7109
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0374

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7109	B99-006-11	B0T7W8	LIQUID				04/02/99	4	N904022-01	7109-001
	B99-006-13	B0T7X4	LIQUID				04/02/99	4	N904022-02	7109-002
		Method Blank	LIQUID						N904022-04	7109-004
		Lab Control Sample	LIQUID						N904022-03	7109-003
		Duplicate (N904022-01)	LIQUID				04/02/99	4	N904022-05	7109-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

SDG 7109
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0374

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
80A	LIQUID	Gross Alpha in Liquid Samples	6880-032	20.0	2			1	1	1/1		
80B	LIQUID	Gross Beta in Liquid Samples	6880-032	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	LIQUID	Gamma Scan in Liquid	6880-032	10.0	2			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

WORK SUMMARY

SDG 7109
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0374

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED BY	METHOD
B0T7W8			N904022-01	7109-001	80A/80		05/10/99		Gross Alpha in Liquid Samples
105/DR		LIQUID	03/29/99	7109-001	80B/80		05/10/99		Gross Beta in Liquid Samples
B99-006-11	B99-006		04/02/99	7109-001	GAM		05/06/99		Gamma Scan in Liquid
B0T7X4			N904022-02	7109-002	80A/80		05/10/99		Gross Alpha in Liquid Samples
105/DR		LIQUID	03/29/99	7109-002	80B/80		05/10/99		Gross Beta in Liquid Samples
B99-006-13	B99-006		04/02/99	7109-002	GAM		05/07/99		Gamma Scan in Liquid
Method Blank			N904022-04	7109-004	80A/80		05/10/99		Gross Alpha in Liquid Samples
		LIQUID		7109-004	80B/80		05/10/99		Gross Beta in Liquid Samples
	B99-006			7109-004	GAM		05/07/99		Gamma Scan in Liquid
Lab Control Sample			N904022-03	7109-003	80A/80		05/10/99		Gross Alpha in Liquid Samples
		LIQUID		7109-003	80B/80		05/10/99		Gross Beta in Liquid Samples
	B99-006			7109-003	GAM		05/07/99		Gamma Scan in Liquid
Duplicate (N904022-01)			N904022-05	7109-005	80A/80		05/10/99		Gross Alpha in Liquid Samples
105/DR		LIQUID	03/29/99	7109-005	80B/80		05/10/99		Gross Beta in Liquid Samples
	B99-006		04/02/99	7109-005	GAM		05/10/99		Gamma Scan in Liquid

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B99-006	Gross Alpha in Liquid Samples	EPA900.0	2			1	1	1	5
80B/80	B99-006	Gross Beta in Liquid Samples	EPA900.0	2			1	1	1	5
GAM	B99-006	Gamma Scan in Liquid	GAMMAHI	2			1	1	1	5
TOTALS				6			3	3	3	15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

N904022-04

Method Blank

METHOD BLANK

SDG	7109	Client/Case no	Hanford SDG-H0374
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904022-04	Client sample id	Method Blank
Dept sample id	7109-004	Material/Matrix	LIQUID
		SAF No	B99-006

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.641	1.2	3.2	3.0	U	80A
Gross Beta	12587-47-2	-2.49	3.2	5.8	4.0	U	80B
Potassium 40	13966-00-2	U		180		U	GAM
Cobalt 60	10198-40-0	U		8.2	25	U	GAM
Cesium 137	10045-97-3	U		6.5	15	U	GAM
Europium 152	14683-23-9	U		19	50	U	GAM
Europium 154	15585-10-1	U		23	50	U	GAM
Europium 155	14391-16-3	U		15	50	U	GAM
Americium 241	14596-10-2	U		15		U	GAM
Uranium 238	U-238	U		890		U	GAM
Uranium 235	15117-96-1	U		24		U	GAM

105F&105DR ISS Project-Other Liquid

QC-BLANK 30478

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

N904022-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7109
Contact L.A. Johnson

Client/Case no Hanford SDG-H0374
Case no TRB-SBB-207925

Lab sample id N904022-03
Dept sample id 7109-003

Client sample id Lab Control Sample
Material/Matrix LIQUID
SAF No B99-006

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	213	16	4.1	3.0		80A	220	8.8	97	68-132	80-120
Gross Beta	179	9.9	5.8	4.0		80B	172	6.9	104	74-126	80-120
Cobalt 60	544	40	20	25		GAM	568	23	96	81-119	80-120
Cesium 137	481	33	24	15		GAM	520	21	92	82-118	80-120

105F&105DR ISS Project-Other Liquid

QC-LCS 30477

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

N904022-05 B0T7W8

DUPLICATE

SDG 7109		Client/Case no Hanford	SDG-H0374
Contact L.A. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N904022-05	Lab sample id N904022-01	Client sample id B0T7W8	
Dept sample id 7109-005	Dept sample id 7109-001	Location/Matrix 105/DR	LIQUID
	Received 04/02/99	Collected 03/29/99 10:40	
		Custody/SAF No B99-006-11	B99-006

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	0.015	0.22	0.43	3.0	U	80A	0.023	0.14	0.29	U	-	
Gross Beta	-0.020	0.34	0.59	4.0	U	80B	-0.125	0.42	0.73	U	-	
Potassium 40	U		0.68		U	GAM	U		0.79	U	-	
Cobalt 60	U		0.078	25	U	GAM	U		0.031	U	-	
Cesium 137	U		0.064	15	U	GAM	U		0.028	U	-	
Europium 152	U		0.15	50	U	GAM	U		0.076	U	-	
Europium 154	U		0.22	50	U	GAM	U		0.087	U	-	
Europium 155	U		0.087	50	U	GAM	U		0.063	U	-	
Americium 241	U		0.046		U	GAM	U		0.061	U	-	
Uranium 238	U		7.6		U	GAM	U		3.7	U	-	
Uranium 235	U		0.16		U	GAM	U		0.10	U	-	

105F&105DR ISS Project-Other Liquid

QC-DUP#1 30479

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

N904022-01

B0T7W8

DATA SHEET

SDG	7109	Client/Case no	Hanford SDG-H0374
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904022-01	Client sample id	B0T7W8
Dept sample id	7109-001	Location/Matrix	105/DR LIQUID
Received	04/02/99	Collected	03/29/99 10:40
		Custody/SAF No	B99-006-11 B99-006

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.023	0.14	0.29	3.0	U	80A
Gross Beta	12587-47-2	-0.125	0.42	0.73	4.0	U	80B
Potassium 40	13966-00-2	U		0.79		U	GAM
Cobalt 60	10198-40-0	U		0.031	25	U	GAM
Cesium 137	10045-97-3	U		0.028	15	U	GAM
Europium 152	14683-23-9	U		0.076	50	U	GAM
Europium 154	15585-10-1	U		0.087	50	U	GAM
Europium 155	14391-16-3	U		0.063	50	U	GAM
Americium 241	14596-10-2	U		0.061		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

105F&105DR ISS Project-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

N904022-02 B0T7X4

DATA SHEET

SDG	7109	Client/Case no	Hanford SDG-H0374
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904022-02	Client sample id	B0T7X4
Dept sample id	7109-002	Location/Matrix	105/DR LIQUID
Received	04/02/99	Collected	03/29/99 11:45
		Custody/SAF No	B99-006-13 B99-006

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.009	0.14	0.32	3.0	U	80A
Gross Beta	12587-47-2	-0.176	0.33	0.58	4.0	U	80B
Potassium 40	13966-00-2	U		0.93		U	GAM
Cobalt 60	10198-40-0	U		0.088	25	U	GAM
Cesium 137	10045-97-3	U		0.076	15	U	GAM
Europium 152	14683-23-9	U		0.17	50	U	GAM
Europium 154	15585-10-1	U		0.26	50	U	GAM
Europium 155	14391-16-3	U		0.099	50	U	GAM
Americium 241	14596-10-2	U		0.053		U	GAM
Uranium 238	U-238	U		9.5		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

105F&105DR ISS Project-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

Test 80A Matrix LIQUID
SDG 7109
Contact L.A. Johnson

METHOD SUMMARY

GROSS ALPHA IN LIQUID SAMPLES
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0374

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 6880-032								
B0T7W8	N904022-01	80		7109-001	U			
B0T7X4	N904022-02	80		7109-002	U			
BLK (QC ID=30478)	N904022-04	80		7109-004	U			
LCS (QC ID=30477)	N904022-03	80		7109-003	ok			
Duplicate (N904022-01)	N904022-05	80		7109-005	-	U		
Nominal values and limits from method				RDLs (pCi/L)	3.0			
105F&105DR ISS Project-Other Liquid						Average		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-032	2σ prep error 20.0 % Reference Lab Notebook 6880 pg.32															
B0T7W8	N904022-01	80		0.29	1.00			43		100			42	05/06/99	05/10	GRB-112
B0T7X4	N904022-02	80		0.32	1.00			37		100			42	05/06/99	05/10	GRB-113
BLK (QC ID=30478)	N904022-04	80		3.2	0.100			36		100				05/06/99	05/10	GRB-113
LCS (QC ID=30477)	N904022-03	80		4.1	0.100			36		100				05/06/99	05/10	GRB-115
Duplicate (N904022-01) (QC ID=30479)	N904022-05	80		0.43	1.00			42		100			42	05/06/99	05/10	GRB-115
Nominal values and limits from method				3.0	0.100			5-150		100			180			

PROCEDURES	REFERENCE	EPA900.0
	EP-120	Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 1.7 ± 3.7
RESIDUE 39 ± 7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

Test 80B	Matrix LIQUID
SDG 7109	
Contact L.A. Johnson	

METHOD SUMMARY

GROSS BETA IN LIQUID SAMPLES

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0374	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Beta	2: Sum, Beta Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 6880-032								
B0T7W8	N904022-01	80		7109-001	U			
B0T7X4	N904022-02	80		7109-002	U			
BLK (QC ID=30478)	N904022-04	80		7109-004	U			
LCS (QC ID=30477)	N904022-03	80		7109-003	ok			
Duplicate (N904022-01)	N904022-05	80		7109-005	-	U		
Nominal values and limits from method				RDLs (pCi/L)	4.0			
105F&105DR ISS Project-Other Liquid							Average	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-032	2σ prep error 15.0 % Reference Lab Notebook 6880 pg.32															
B0T7W8	N904022-01	80		0.73	1.00			43		100			42	05/06/99	05/10	GRB-112
B0T7X4	N904022-02	80		0.58	1.00			37		100			42	05/06/99	05/10	GRB-113
BLK (QC ID=30478)	N904022-04	80		5.8	0.100			36		100				05/06/99	05/10	GRB-113
LCS (QC ID=30477)	N904022-03	80		5.8	0.100			36		100				05/06/99	05/10	GRB-115
Duplicate (N904022-01) (QC ID=30479)	N904022-05	80		0.59	1.00			42		100			42	05/06/99	05/10	GRB-115
Nominal values and limits from method				4.0	0.100			5-150		100			180			

PROCEDURES	REFERENCE	EPA900.0
	EP-120	Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD	MDA	2.7	± 5.7
FOR 5 SAMPLES	RESIDUE	39	± 7

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0374

Test GAM	Matrix LIQUID
SDG 7109	
Contact L.A. Johnson	

METHOD SUMMARY

GAMMA SCAN IN LIQUID

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0374	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6880-032								
B0T7W8	N904022-01			7109-001	U		U	
B0T7X4	N904022-02			7109-002	U		U	
BLK (QC ID=30478)	N904022-04			7109-004	U		U	
LCS (QC ID=30477)	N904022-03			7109-003	ok		ok	
Duplicate (N904022-01)	N904022-05			7109-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	
105F&105DR ISS Project-Other Liquid								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-032	2σ prep error 10.0 % Reference Lab Notebook 6880 pg.32															
B0T7W8	N904022-01			0.028	100					581			38	04/22/99	05/06	JR,04,00
B0T7X4	N904022-02			0.076	100					380			39	04/22/99	05/07	JR,01,00
BLK (QC ID=30478)	N904022-04			6.5	0.500					380				04/22/99	05/07	JR,04,00
LCS (QC ID=30477)	N904022-03			24	0.500					380				04/22/99	05/07	JR,03,00
Duplicate (N904022-01) (QC ID=30479)	N904022-05			0.064	100					492			42	04/22/99	05/10	JR,01,00
Nominal values and limits from method				15	0.500					5			180			

PROCEDURES	REFERENCE	GAMMAHI
	RP-070	Sample Dissolution - HF Method, rev 0
	RP-100	Ge(Li) Preparation for Reactor Waste Samples, rev 0

AVERAGES ± 2 SD	MDA 6.1	± 21
FOR 5 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	06/01/99

SDG 7109
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0374

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

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Client Hanford
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Case no SDG-H0374

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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GUIDE, cont.

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Contract TRB-SBB-207925
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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-11	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 105/DR		SAF No.: B99-006
Ice Chest No.: SML 579	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: ~~TMA/RCRA~~ RJN 4/1/99 TMA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lithium}	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) Special Instructions
Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL

Sample No.	Matrix *	Sample Date	Sample Time	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lithium}	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) Special Instructions
B0T7W8	Other Liquid	3-29-99	1040	X	X	X	X	X	X	X	X	X	X
~~B0T7X0~~	~~Other Liquid~~						RJN 4/1/99				RJN 4/1/99		B0T7W
~~B0T7X2~~	~~Other Liquid~~	DAB 3-29-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 3-29-99 / 1517	Received By: Doug IB @ 3724	Date/Time: 3-29-99 / 1517
Relinquished By: REF IB @ 3728	Date/Time: 4/99 1100	Received By: SJGALO	Date/Time: 4/99 1100
Relinquished By: SJGALO	Date/Time: 4/99 1100	Received By: FED EX	Date/Time: 4-1-99
Relinquished By: Fed Ex	Date/Time: 4-2-99 10:31	Received By: [illegible]	Date/Time: 4-2-99 10:31
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

in IB @ 4°C

D BOWER UNAVAILABLE TO SIGN COC

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-006-13	Page 1 of 1

Collector: Doug Bowers	Company Contact: Dave Smith	Telephone No.: 376-3055	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 105F & 105DR ISS Project - Other Liquid	Sampling Location: 190/DR		SAF No.: B99-006
Ice Chest No.: SMK 220	Field Logbook No.: EFL 1133-7		Method of Shipment: Fed Ex
Shipped To: ~~TMA/RECRA~~ RJN 4/1/99 Thermo Retec	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C			Cool 4C	Cool 4C	None	None	None		None
Type of Container	aGs*	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	120mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL)	ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lithium)	Semi-VOA - 8270A (TCL)	PCBs - 8080	Pest/PCBs - 8080 (TCL)	Activity Scan	Gross Alpha; Gross Beta	Ignitability - 1010	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0T7X4	Other Liquid	3-29-99	1145	X	X	X	X	X	X	X	X	X	X
							RJN 4/1/99				RJN 4/1/99		B0T7X5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers, Doug Bowers	Date/Time: 3-29-99/1517	Received By: D.F.S. IA@3726	Date/Time: 3-29-99/1517
Relinquished By: REF IA @ 3726	Date/Time: 4/99 1100	Received By: SIGALE N/Sale	Date/Time: 4/99 1100
Relinquished By: SIGALE N/Sale	Date/Time: 4/99 1100	Received By: FED EX	Date/Time: 4-1-99
Relinquished By: Fed Ex	Date/Time: 4-2-99 10:31	Received By: J.R. Corrao J.R. Corrao	Date/Time: 10:31 4-2-99

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

in IA @ 4°C

D BOWERS NOT AVAILABLE FOR SIGNING COC

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

SHIPPING INST.

SHIP TO: THERMO RETEC
Company: 2030 WRIGHT AVE.
Address: RICHMOND, CA. 94804-0040
City, State, Zip: LARRY JOHNSON
Attention: 510-235-2633

Originating Facility — Building: 3728 Area: 300

Originator Signature: Stuart Dah

Date: 4-1-99

FROM: ☐ WHC ☐ KEH ☐ PNL ☒ OTHER BHI

OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT

VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☒ Air (Passenger) ☐ Air (Cargo)

Cost Code: R105D029WC

SHIPMENT DESCRIPTION

CONTAINERS/PACKAGING						CONTENT DESCRIPTION
Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg	See 49 CFR 172.101(c) Hazardous Material Table
1	METAL CAN INNER, POLY COOLER OUTER	IP3 INNER, STRONG TIGHT OUTER	70cm x 40cm x 40cm	2-60ml 1-1L 1.12L TOTAL	20LBS 9Kg	Proper Ship Name: Flammable solids, organic, n.o.s. LTD. QTY. Hazard Class: 4.1 UN/NA No.: 1325 PG III List Secondary Hazards: NONE PI Y 419 List Labels Req'd/Applied CLASS 4
SAMPLE #: BOV4N7 ICE CHEST # SML 248 ERG # 133 EMERGENCY RESPONSE #						Proper Ship Name: ONE IP3 INNER CONTAINER Hazard Class: HAS 2EA 60ml JAR UN/NA No.: ONE IP3 INNER CONTAINER List Secondary Hazards: HAS 1EA 1 LITER JAR List Labels Req'd/Applied
509-373-3800 1-888-766-0771				OR		Proper Ship Name: 1 LITRE JAR = 500G Hazard Class: 60ML JAR = 30G UN/NA No.: 560 G TOTAL List Secondary Hazards: shipped per List Labels Req'd/Applied USG-14

Total No. Containers	Gross Wt of Shipment	Identify Placards Required:	Identify Property Control or Return Order No.: (if applicable)
1	20LBS 9Kg	1. N/A 2. — 3. — 4. —	

Material in manufacturers original container: ☒ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements: ☒ Yes

Describe Internal Packaging: GLASS JARS BUBBLE WRAPPED, DOUBLE BAGGED AND PACKED IN VERMICULITE IN IP3, IP3 IS PACKED WITH PACKING PEANUTS IN STRONG TIGHT.

RADIATION RELEASE	Survey No.	Date	RM Signature	Print Name
			SEE ATTACHED ACTIVITY REPORT.	

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for: ☒ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: M A Sams Print Name: M.A. SAMS Date: 4-1-99

FOR OFFSITE SHIPMENTS — ADDITIONAL APPROVAL REQUIRED

WHC TRAFFIC	B.L. No.	Date Shipped	ETA	Routing	Special Considerations
		4/1/99	4/2/99	FEG-X	

WHC Shipping: _____

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

SHIPPING INST.

SHIP TO: THERMO RETEC
Company: 2030 WRIGHT AVE.
Address: RICHMOND, CA. 94804-0040
City, State, Zip: LARRY JOHNSON
Attention: 510-235-2633

Originating Facility: Building 3728, Area 300
Originator Signature: Stuart A. Dah
Date: 4-1-99
FROM: ☐ WHC ☐ KEH ☐ PNL ☒ OTHER B&T

OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☒ Air (Passenger) ☐ Air (Cargo)
Cost Code: R105D029WC

SHIPMENT DESCRIPTION

CONTAINERS / PACKAGING						CONTENT DESCRIPTION
Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg	See 49 CFR 172.101(c) Hazardous Material Table
2	METAL CAN INNER, POLY COOLER OUTER	IP3 INNER, STRONG TIGHT OUTER	70cm x 40cm x 40cm	4-60ml 2-500ml 1240ml TOTAL	31 LBS 14 Kg	Proper Ship Name: Flammable liquids, n.o.s., LTD, QTY. Hazard Class: 3 UN/NA No.: 1993 PG II PI Y 305 List Secondary Hazards: NONE List Labels Req'd/Applied: CLASS 3
SAMPLE #s: BOT 7X4, BOT 7W8 ERG # 128 CHEST # SML 220 & SML 579						Proper Ship Name: EACH IP3 INNER CONTAINER HAS 2-60ML & 1-500ML JARS. Hazard Class: UN/NA No.: List Secondary Hazards: shipped per USG-14 List Labels Req'd/Applied
EMERGENCY RESPONSE # 509-373-3800 OR 1-888-766-0771						Proper Ship Name: Hazard Class: UN/NA No.: List Secondary Hazards: List Labels Req'd/Applied

Total No. Containers	Gross Wt of Shipment	Identify Placards Required:	Identify Property Control or Return Order No.: (if applicable)
2	62 LBS 28 Kg	1. N/A 2. — 3. — 4. —	

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements: ☒ Yes

Describe Internal Packaging: GLASS JARS BUBBLE WRAPPED, DOUBLE BAGGED AND PACKED WITH VERMICULITE IN IP3. IP3 IS PACKED WITH ~~WET ICE~~ ~~AND~~ VERMICULITE IN STRONG TIGHT.

RADIATION RELEASE	Survey No.	Date	RM Signature	Print Name
			SEE ATTACHED ACTIVITY REPORTS.	

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for: ☒ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: M A Sams Print Name: M.A. SAMS Date: 4-1-99

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

WHC	TRAFFIC	B.L. No.	Date Shipped	ETA	Routing	Special Considerations
			4/1/99	4/2/99	FED-X	

WHC Traffic: Grace C. Brown WHC Shipping:

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 4-2-99 10:30

CoC No. B99-006-11 & 13, B99-007-09

Container I.D. No. SML-220, SML-579, SML-248 Requested TAT (Days) 21 + 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3
7. Number of containers per sample: 3 (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 4-2-99 Time: 10:30

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____