H0363-TMA/RECRA

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

0051467

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-050
RFW #: 9903L468
SDG/SAF #: H0363/B99-050

W.O. #: 10985-001-001-9999-00
Date Received: 03-17-99

SEMIVOLATILE

Six (6) soil samples were collected on 03-11-99.

The samples and their associated QC samples were extracted on 03-18-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 03-31-99.

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 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. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
7. The method blank contained the common laboratory contaminant Bis(2-ethylhexyl)phthalate at a level less than the CRQL.

AUG 1999
RECEIVED
EDMC

For J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-26-99
Date

som\gorup\data\bna\tnu03468.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 19 pages.

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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.

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Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9903L468** Client: **TNU-HANFORD B99-050** Work Order: 10985001001 Report Date: 04/19/99 15:19 Page: 1a

	Cust ID:	B0V052		B0V052		B0V052		B0V054		B0V056		B0V058	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	80	%	77	%	65	%	74	%	87	%	74	%
	2-Fluorobiphenyl	78	%	73	%	67	%	71	%	85	%	75	%
	Terphenyl-d14	92	%	78	%	77	%	83	%	104	%	88	%
	Phenol-d5	74	%	72	%	60	%	66	%	81	%	72	%
	2-Fluorophenol	78	%	76	%	65	%	71	%	82	%	75	%
	2,4,6-Tribromophenol	74	%	74	%	67	%	66	%	76	%	66	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	66	%	54	%	350	U	350	U	350	U
bis(2-Chloroethyl)ether		350	U	350	U	350	U	350	U	350	U	350	U
2-Chlorophenol		350	U	69	%	58	%	350	U	350	U	350	U
1,3-Dichlorobenzene		350	U	350	U	350	U	350	U	350	U	350	U
1,4-Dichlorobenzene		350	U	68	%	58	%	350	U	350	U	350	U
1,2-Dichlorobenzene		350	U	350	U	350	U	350	U	350	U	350	U
2-Methylphenol		350	U	350	U	350	U	350	U	350	U	350	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	350	U	350	U	350	U
4-Methylphenol		350	U	350	U	350	U	350	U	350	U	350	U
N-Nitroso-di-n-propylamine		350	U	77	%	60	%	350	U	350	U	350	U
Hexachloroethane		350	U	350	U	350	U	350	U	350	U	350	U
Nitrobenzene		350	U	350	U	350	U	350	U	350	U	350	U
Isophorone		350	U	350	U	350	U	350	U	350	U	350	U
2-Nitrophenol		350	U	350	U	350	U	350	U	350	U	350	U
2,4-Dimethylphenol		350	U	350	U	350	U	350	U	350	U	350	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	350	U	350	U	350	U
2,4-Dichlorophenol		350	U	350	U	350	U	350	U	350	U	350	U
1,2,4-Trichlorobenzene		350	U	71	%	61	%	350	U	350	U	350	U
Naphthalene		350	U	350	U	350	U	350	U	350	U	350	U
4-Chloroaniline		350	U	350	U	350	U	350	U	350	U	350	U
Hexachlorobutadiene		350	U	350	U	350	U	350	U	350	U	350	U
4-Chloro-3-methylphenol		350	U	76	%	61	%	350	U	350	U	350	U
2-Methylnaphthalene		350	U	350	U	350	U	350	U	350	U	350	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	350	U	350	U	350	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	350	U	350	U	350	U
2,4,5-Trichlorophenol		880	U	880	U	880	U	870	U	880	U	860	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0V052		B0V052		B0V052		B0V054		B0V056		B0V058	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	350	U	350	U	350	U	350	U	350	U	350	U
2-Nitroaniline	880	U	880	U	880	U	870	U	880	U	860	U
Dimethylphthalate	350	U	350	U	350	U	350	U	350	U	350	U
Acenaphthylene	350	U	350	U	350	U	350	U	350	U	350	U
2,6-Dinitrotoluene	350	U	350	U	350	U	350	U	350	U	350	U
3-Nitroaniline	880	U	880	U	880	U	870	U	880	U	860	U
Acenaphthene	350	U	71	%	64	%	350	U	350	U	350	U
2,4-Dinitrophenol	880	U	880	U	880	U	870	U	880	U	860	U
4-Nitrophenol	880	U	85	%	67	%	870	U	880	U	860	U
Dibenzofuran	350	U	350	U	350	U	350	U	350	U	350	U
2,4-Dinitrotoluene	350	U	74	%	65	%	350	U	350	U	350	U
Diethylphthalate	350	U	350	U	350	U	350	U	350	U	350	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	350	U	350	U	350	U
Fluorene	350	U	350	U	350	U	350	U	350	U	350	U
4-Nitroaniline	880	U	880	U	880	U	870	U	880	U	860	U
4,6-Dinitro-2-methylphenol	880	U	880	U	880	U	870	U	880	U	860	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	350	U	350	U	350	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	350	U	350	U	350	U
Hexachlorobenzene	350	U	350	U	350	U	350	U	350	U	350	U
Pentachlorophenol	880	U	68	%	54	%	870	U	880	U	860	U
Phenanthrene	350	U	350	U	350	U	350	U	350	U	350	U
Anthracene	350	U	350	U	350	U	350	U	350	U	350	U
Carbazole	350	U	350	U	350	U	350	U	350	U	350	U
Di-n-butylphthalate	350	U	350	U	350	U	350	U	350	U	350	U
Fluoranthene	350	U	350	U	350	U	350	U	350	U	350	U
Pyrene	350	U	77	%	72	%	350	U	350	U	350	U
Butylbenzylphthalate	350	U	350	U	350	U	350	U	350	U	350	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	350	U	350	U	350	U
Benzo(a)anthracene	350	U	350	U	350	U	350	U	350	U	350	U
Chrysene	350	U	350	U	350	U	350	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	34	JB	28	JB	350	U	82	JB	19	JB	60	JB
Di-n-octyl phthalate	350	U	350	U	350	U	350	U	350	U	350	U
Benzo(b)fluoranthene	350	U	350	U	350	U	350	U	350	U	350	U
Benzo(k)fluoranthene	350	U	350	U	350	U	350	U	350	U	350	U
Benzo(a)pyrene	350	U	350	U	350	U	350	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	350	U	350	U	350	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	350	U	350	U	350	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	350	U	350	U	350	U

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

Recra LabNet - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9903L468** Client: **TNU-HANFORD B99-050** Work Order: 10985001001 Report Date: 04/19/99 15:19 Page: 2a

	Cust ID:	B0V060		B0V062		SBLKSL		SBLKSL BS	
Sample Information	RFW#:	005		006		99LE0331-MB1		99LE0331-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	81	%	76	%	97	%	93	%
	2-Fluorobiphenyl	82	%	73	%	89	%	91	%
	Terphenyl-d14	93	%	87	%	102	%	102	%
	Phenol-d5	75	%	70	%	82	%	81	%
	2-Fluorophenol	80	%	74	%	89	%	84	%
	2,4,6-Tribromophenol	72	%	66	%	79	%	88	%
Phenol		340	U	350	U	330	U	74	%
bis(2-Chloroethyl)ether		340	U	350	U	330	U	330	U
2-Chlorophenol		340	U	350	U	330	U	81	%
1,3-Dichlorobenzene		340	U	350	U	330	U	330	U
1,4-Dichlorobenzene		340	U	350	U	330	U	81	%
1,2-Dichlorobenzene		340	U	350	U	330	U	330	U
2-Methylphenol		340	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	350	U	330	U	330	U
4-Methylphenol		340	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	350	U	330	U	85	%
Hexachloroethane		340	U	350	U	330	U	330	U
Nitrobenzene		340	U	350	U	330	U	330	U
Isophorone		340	U	350	U	330	U	330	U
2-Nitrophenol		340	U	350	U	330	U	330	U
2,4-Dimethylphenol		340	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	350	U	330	U	330	U
2,4-Dichlorophenol		340	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	350	U	330	U	93	%
Naphthalene		340	U	350	U	330	U	330	U
4-Chloroaniline		340	U	350	U	330	U	330	U
Hexachlorobutadiene		340	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	350	U	330	U	91	%
2-Methylnaphthalene		340	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	880	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0V060		B0V062		SBLKSL		SBLKSL BS	
RFW#:	005		006		99LE0331-MB1		99LE0331-MB1	
2-Chloronaphthalene	340	U	350	U	330	U	330	U
2-Nitroaniline	860	U	880	U	840	U	840	U
Dimethylphthalate	340	U	350	U	330	U	330	U
Acenaphthylene	340	U	350	U	330	U	330	U
2,6-Dinitrotoluene	340	U	350	U	330	U	330	U
3-Nitroaniline	860	U	880	U	840	U	840	U
Acenaphthene	340	U	350	U	330	U	93	%
2,4-Dinitrophenol	860	U	880	U	840	U	840	U
4-Nitrophenol	860	U	880	U	840	U	112	%
Dibenzofuran	340	U	350	U	330	U	330	U
2,4-Dinitrotoluene	340	U	350	U	330	U	98 *	%
Diethylphthalate	340	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	350	U	330	U	330	U
Fluorene	340	U	350	U	330	U	330	U
4-Nitroaniline	860	U	880	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	880	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	350	U	330	U	330	U
Hexachlorobenzene	340	U	350	U	330	U	330	U
Pentachlorophenol	860	U	880	U	840	U	96	%
Phenanthrene	340	U	350	U	330	U	330	U
Anthracene	340	U	350	U	330	U	330	U
Carbazole	340	U	350	U	330	U	330	U
Di-n-butylphthalate	340	U	350	U	330	U	330	U
Fluoranthene	340	U	350	U	330	U	330	U
Pyrene	340	U	350	U	330	U	99	%
Butylbenzylphthalate	340	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	350	U	330	U	330	U
Benzo(a)anthracene	340	U	350	U	330	U	330	U
Chrysene	340	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	22	JB	22	JB	29	J	22	JB
Di-n-octyl phthalate	340	U	350	U	330	U	330	U
Benzo(b)fluoranthene	340	U	350	U	330	U	330	U
Benzo(k)fluoranthene	340	U	350	U	330	U	330	U
Benzo(a)pyrene	340	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	350	U	330	U	330	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.

B0V052

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-050

Matrix: (soil/water) SOIL Lab Sample ID: 9903L468-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D033109

Level: (low/med) LOW Date Received: 03/17/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 03/18/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.19	300	JAB
2.	UNKNOWN	19.03	100	J
3.	UNKNOWN	22.04	200	JB
4.	UNKNOWN	23.08	200	JB
5.	ALKANE	23.98	90	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V054

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-050

Matrix: (soil/water) SOIL Lab Sample ID: 9903L468-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D033112

Level: (low/med) LOW Date Received: 03/17/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 03/18/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.19	300	JAB
2.	UNKNOWN	19.04	90	J
3.	UNKNOWN	22.05	200	JB
4.	UNKNOWN	23.08	100	JB

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V056

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-050

Matrix: (soil/water) SOIL Lab Sample ID: 9903L468-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D033113

Level: (low/med) LOW Date Received: 03/17/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 03/18/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.19	300	JAB
2.	UNKNOWN	19.03	100	J
3.	UNKNOWN	22.04	200	JB
4.	UNKNOWN	23.08	200	JB
5.	UNKNOWN	23.47	100	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V058

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-050

Matrix: (soil/water) SOIL Lab Sample ID: 9903L468-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D033114

Level: (low/med) LOW Date Received: 03/17/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 03/18/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.19	300	JAB
2.	UNKNOWN	19.03	100	J
3.	UNKNOWN	22.05	200	JB
4.	UNKNOWN	23.08	100	JB

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V060

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-050

Matrix: (soil/water) SOIL Lab Sample ID: 9903L468-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D033115

Level: (low/med) LOW Date Received: 03/17/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 03/18/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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.	ALDOL CONDENSATE	5.18	300	JAB
2.	ALDOL CONDENSATE	5.82	90	JA
3.	UNKNOWN	19.03	100	J
4.	UNKNOWN	22.11	100	JB
5.	UNKNOWN	23.08	200	JB
6.	ALKANE	23.97	200	J
7.	ALKANE	25.50	90	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V062

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-050

Matrix: (soil/water) SOIL Lab Sample ID: 9903L468-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D033116

Level: (low/med) LOW Date Received: 03/17/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 03/18/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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.	ALDOL CONDENSATE	5.18	200	JAB
2.	ALDOL CONDENSATE	5.82	90	JA
3.	UNKNOWN	19.03	200	J
4.	UNKNOWN	22.08	200	JB
5.	UNKNOWN	23.08	100	JB
6.	ALKANE	23.97	100	J
7.	ALKANE	25.50	90	J

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-050

DATE RECEIVED: 03/17/99 RFW LOT # :9903L468

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V052	001	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V052	001 MS	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V052	001 MSD	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V054	002	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V056	003	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V058	004	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V060	005	S	99LE0331	03/11/99	03/18/99	03/31/99
B0V062	006	S	99LE0331	03/11/99	03/18/99	03/31/99

LAB QC:

SBLKSL	MB1	S	99LE0331	N/A	03/18/99	03/31/99
SBLKSL	MB1 BS	S	99LE0331	N/A	03/18/99	03/31/99

RECRA LabNet Use Only
99031468

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-050
Est. Final Proj. Sampling Date:
Project #: L0985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Delta TAT: 30 days
Date Rec'd: 3/18/99 Date Due: 4/17/99
Account #: 17 OJ 3/18/99 16 OJ 3/18/99

Refrigerator #			3																
#/Type Container	Liquid																		
	Solid		1 qt																
Volume	Liquid																		
	Solid		250																
Preservatives																			
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: Metal	INORG: CN									
RECRA LabNet Use Only			06254																

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													
001	B0V052			S	3/11/99	1035		✓											
2	54					1045		✓											
3	56					1055		✓											
4	58					1106		✓											
5	60					1113		✓											
6	62					1122		✓											
7	64																		
8	66																		

OJ 3/18/99

Special Instructions:
saf # B99-050

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC OJ 3/18/99
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ✓
Airbill # *
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. 4.2 °C

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

Relinquished by	Received by	Date	Time
Delta	Fedex	3/17/99	2140

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

9903L468

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-050
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: 3/18/99 Date Due: 4/17/99
Account #: 17 JT 3/18/99 16 JT 3/18/99

Refrigerator #			3																
#/Type Container	Liquid																		
	Solid		1q																
Volume	Liquid																		
	Solid		250																
Preservatives																			
ANALYSES REQUESTED →				ORGANIC							INORG								
				VOA	BNA	Pest/PCB	Herb				Metal	CN							
				RECRA LabNet Use Only															
			0625H																

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													
001	BØV052			S	3/11/99	1035		✓											
2	54					1045		✓											
3	56					1055		✓											
4	58					1106		✓											
5	60					1113		✓											
6	62					1122		✓											
7	64																		
8	66																		

JT 3/18/99

Special Instructions:
saf # B99-050

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ✓ JT 3/18/99
Airbill # ✗
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. 4.2 °C

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

Relinquished by	Received by	Date	Time
Delta	Fedex	3/17/99	2140

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-050-02	Page 1 of 4

Collector: Doug Bowers	Company Contact: Jeff Lerch — Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL Stock pile	SAF No.: B99-050	
Ice Chest No.: SML 598	Field Logbook No.: EL 1395-2	Method of Shipment: FED EX	
Shipped To: ~~[illegible]~~ 870 3-11-99 BECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

468

Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
(1) B0V052	Soil	3-11-99	1035							B0V053	X	X	B0V053
B0V054	Soil	3-11-99	1045							B0V055	X	X	B0V055
B0V056	Soil	3-11-99	1055							B0V057	X	X	B0V057
B0V058	Soil	3-11-99	1106								X	X	B0V059
B0V060	Soil	3-11-99	1113								X	X	B0V061

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	GOALE [illegible]	3/17/99 1030	OVERNIGHT CARRIER	
Relinquished By	Overnight Carrier		Received By: Yoder	3/17/99 2140
Relinquished By	Delta		Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

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	B99-050-02	Page 1 of 1 3-11-99

Collector: Doug Bowers	Company Contact: Jeff Lerch — Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stock pile	SAF No.: B99-050	
Ice Chest No.: SMG 598	Field Logbook No.: EL 1395-2	Method of Shipment: FED EX	
Shipped To: ~~TMA~~/RECRA 3-11-99	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)
Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)
B0V062	Soil	3-11-99	1122								X	X	B0V063
B0V064	Soil												
B0V066	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C. GALE	Date/Time: 3/17/99 1030	Received By: OVERNIGHT CARRIER	Date/Time:
Relinquished By: Overnight Carrier	Date/Time:	Received By: Fedex	Date/Time: 3/17/99 2140
Relinquished By: Delta	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

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

MAY 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-050
RFW#: 9903L498
SDG/SAF#: H0363/B99-050

W.O.#: 10985-001-001-9999-00
Date Received: 03-19-99

PCB

The set of samples consisted of six (6) soil samples collected on 03-11-99.

The samples and their associated QC samples were extracted on 03-22-99 and analyzed based on SW846, 3rd Edition on 03-24,25-99. The extraction procedure was based on method 3550 and the extracts were analyzed based on method 8082 for Aroclors only.

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 samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Eighteen (18) of twenty (20) surrogate recoveries were outside acceptance criteria. All recoveries showed a high bias between 118% and 137%. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
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

04-01-99
Date

pef\r:\group\data\pcb\03L-498.pes

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 11 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 Philadelphia Sample Discrepancy Report (SDR) SDR #: 9960079

Initiator: G. Lage
Date: 3-25-99
Client: TNU - Hanford

RFW Batch: 9903L498
Samples: all
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Soil
Prep Batch: 99LE0355

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

all the sample except -002 and the Blk and BS had surrogates above criteria. TCX recoveries ranged from 120-130%, criteria for TCX is 28-115%. DCB recoveries ranged from 125-137%. (38-122%). No target compounds were found in the samples. and all spikes were within criteria.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

Report and note in narrative.

4. Project Manager Instructions...signature/date: _____

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 3/25/99

Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: J. Michael Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: OJ	__	__ GC/LC: Rycklak/Schnell
__	X Section Mgr: Siery/Durke/Daniels	__	__ MS: LeMin/McIntyre/Taylor/Kasdras
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-07/98

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 03/25/99 12:57

RFW Batch Number: **9903L498** Client: **TNU-HANFORD B99-050** Work Order: 10985001001 Page: 1

005

	Cust ID:	B0V052	B0V052	B0V052	B0V054	B0V056	B0V058
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	122 * %	120 * %	122 * %	118 %	122 * %	120 * %
	Decachlorobiphenyl	127 * %	125 * %	129 * %	121 %	129 * %	125 * %
Aroclor-1016		36 U	36 U	36 U	35 U	36 U	35 U
Aroclor-1221		71 U	71 U	71 U	70 U	71 U	69 U
Aroclor-1232		36 U	36 U	36 U	35 U	36 U	35 U
Aroclor-1242		36 U	36 U	36 U	35 U	36 U	35 U
Aroclor-1248		36 U	36 U	36 U	35 U	36 U	35 U
Aroclor-1254		36 U	85 %	87 %	35 U	36 U	35 U
Aroclor-1260		36 U	36 U	36 U	35 U	36 U	35 U

	Cust ID:	B0V060	B0V062	PBLKFX	PBLKFX BS
Sample Information	RFW#:	005	006	99LE0355-MB1	99LE0355-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	128 * %	125 * %	120 * %	130 * %
	Decachlorobiphenyl	134 * %	133 * %	127 * %	137 * %
Aroclor-1016		34 U	35 U	33 U	33 U
Aroclor-1221		69 U	70 U	67 U	67 U
Aroclor-1232		34 U	35 U	33 U	33 U
Aroclor-1242		34 U	35 U	33 U	33 U
Aroclor-1248		34 U	35 U	33 U	33 U
Aroclor-1254		34 U	35 U	33 U	83 %
Aroclor-1260		34 U	35 U	33 U	33 U

gw 03-29-99

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

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-050

DATE RECEIVED: 03/19/99 RFW LOT # :9903L498

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V052	001	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V052	001 MS	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V052	001 MSD	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V054	002	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V056	003	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V058	004	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V060	005	S	99LE0355	03/11/99	03/22/99	03/24/99
B0V062	006	S	99LE0355	03/11/99	03/22/99	03/24/99

LAB QC:

PBLKFX	MB1	S	99LE0355	N/A	03/22/99	03/25/99
PBLKFX	MB1 BS	S	99LE0355	N/A	03/22/99	03/25/99

gw 03-29-99

RECRA LabNet Use Only

99031498

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals digestion

Client: INU - Hanford B99-050

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: 3/19/99 Date Due: 4/18/99

Account #:

Refrigerator #				3					3									400
#/Type Container	Liquid																	
	Solid			1q					1q									
Volume	Liquid																	
	Solid			250					250									
Preservatives																		
ANALYSES REQUESTED →				ORGANIC					INORG									
				VOA	BNA	Pest/PCB	Herb		Metal	CN								

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	RECRA LabNet Use Only													
001	B0V052			S	3/11/99	10 ~~0935~~	3/19/99			SPCB										
2	54					1045														
3	56					1055														
4	58					1106														
5	60					1113														
6	62					1122														

Special Instructions:

saf#B99-050

DATE/REVISIONS:

1. Run matrix QC
2. PCBs by 8082
3. Met ID = as, Tl, Pb 3/22/99 metals
4. list corrected.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # *

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'd Y or N

Cooler Temp. 3.6 °C

Relinquished by	Received by	Date	Time
Fed-ex	Fedex	3/19/99	0930

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

*423579523520

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-050-02

Collector Doug Bowers	**Company Contact** Jeff Lerch	**Telephone No.** 373-5904	**Project Coordinator** TRENT, SJ
Price Code	**Data Turnaround** 45 Days		
Project Designation Landfill 1D Cleanup	**Sampling Location** 300 FF-1 1D landfill BCL Stock pile		**SAF No.** B99-050
Ice Chest No. ERC-96-016	**Field Logbook No.** EL 1395-2		**Method of Shipment** FED EX
Shipped To ~~[illegible]~~ 1670 3-11-99 RECRA	**Offsite Property No.** A99C088		**Bill of Lading/Air Bill No.** 4235795235 20
			COA RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS

498

Special Handling and/or Storage

Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
B0V052	Soil	3-11-99	1035							B0V053 X	X	X	B0V053
B0V054	Soil	3-11-99	1045							B0V055 X	X	X	B0V055
B0V056	Soil	3-11-99	1055							B0V057 X	X	X	B0V057
B0V058	Soil	3-11-99	1106							X	X	X	B0V059
B0V060	Soil	3-11-99	1113							X	X	X	B0V061

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

Relinquished By	Date/Time	Received By	Date/Time
D. St. John	3/18/99 12:20		
Dave St. John for D. Bowers			
Fed Ex	3-19-99 0930	J. Stanford	3-19-99/0930
~~Jeff Lerch~~		~~J. Stanford~~	3/19/99

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

Stored in Refrig 2 @ 3728 3/11/99 thru 3/18/99

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Stanford	Title: Lab. Tech.	Date/Time: 3-19-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-050-02	Page 2 of 4

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stockpile		SAF No.: B99-050
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A990088		Bill of Lading/Air Bill No.:
			COA: RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None					
	Type of Container	aG	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
Special Handling and/or Storage	Volume	250mL	250mL	250mL	500mL	1000mL					
SAMPLE ANALYSIS		See item (1) in Special Instructions	Ignitability - 1010	pH (Soil) - 9045	Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions					

Sample No.	Matrix *	Sample Date	Sample Time									
B0V052	Soil	3-11-99	1035	X								B0V053
B0V054	Soil	3-11-99	1045	X								B0V055
B0V056	Soil	3-11-99	1055	X								B0V057
B0V058	Soil	3-11-99	1106	X								B0V059
B0V060	Soil	3-11-99	1113	X								B0V061

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: D St John / David St John for D. Bowers	Date/Time: 3/18/99 12:20	Received By: Dedeal	Date/Time:
Relinquished By: Dedeal	Date/Time:	Received By: Stolli	Date/Time: 3/19/99 0930
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Thallium}
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

stored in refrigerator 2 @ 3728 3/11/99 - 3/18/99

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

B99-050-02

3-11-99

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stock pile		SAF No.: B99-050
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA 3-11-99	Offsite Property No.: A99C 0088		Bill of Lading/Air Bill No.

Price Code:

Data Turnaround: 45 Days

COA RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)
B0V062	Soil	3-11-99	1122								X	X	BOVC63
~~B0V064~~	~~Soil~~												
~~B0V066~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	D. St. John for D Bowers	3/18/99 12:20	Overnight carrier	
Relinquished By	Dell		Received By	3/19/99 10:30
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

Stored in refrig 2@ 372B 3/11/99 thru 3/18/99

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	B99-050-02	Page 4 of 4

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stockpile		SAF No.: B99-050
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA 3-16-99	Offsite Property No.: A990 Ø 88		Bill of Lading/Air Bill No.: 423579523520
			COA: RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None					
	Type of Container	aG	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
Special Handling and/or Storage	Volume	250mL	250mL	250mL	500mL	1000mL					
SAMPLE ANALYSIS		See item (1) in Special Instructions	Ignitability - 1010	pH (Soil) - 9045	Metals by ICP (ICP) - 6010, Mercury (ICP) - 1311/7470	See item (2) in Special Instructions					
Sample No.	Matrix *	Sample Date	Sample Time								
B0V062	Soil	3-11-99	1122	X							B0V063
~~B0V064~~	~~Soil~~										B0V065
~~B0V066~~	~~Soil~~										B0V067

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: D St. John / Donald St. John	Date/Time: 3/18/99 12:20	Received By: overnight carrier / R. D. Bowers	Date/Time
Relinquished By: FedEx	Date/Time: 3-19-99/0930	Received By: [illegible]	Date/Time: 3-19-99/0930
Relinquished By: [illegible]	Date/Time: 3/19/99	Received By: [illegible]	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Thallium}
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

DAS 3/18/99

Stored in refrig 2@ 3728 3/11/99 - 3/18/99

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech	Date/Time: 3-19-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-050
RFW# : 9903L498
SDG/SAF# : H0363/B99-050

W.O.# : 10985-001-001-9999-00
Date Received: 03-19-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

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

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}. Refer to the Inorganics Method Blank Data Summary.

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.

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

11. All MSs and MSDs were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.

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 17 pages.

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12. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. 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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-1-99
Date

mld/m03-498

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9903L498

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 03/31/99

CLIENT: TNU-HANFORD B99-050 RECRA LOT #: 9903L498

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V052	Arsenic, Total	2.5	MG/KG	0.28	1.0
		Lead, Total	5.8	MG/KG	0.15	1.0
		Thallium, Total	1.7	MG/KG	0.31	1.0
-002	B0V054	Arsenic, Total	3.1	MG/KG	0.24	1.0
		Lead, Total	3.4	MG/KG	0.13	1.0
		Thallium, Total	1.8	MG/KG	0.27	1.0
-003	B0V056	Arsenic, Total	2.8	MG/KG	0.28	1.0
		Lead, Total	9.7	MG/KG	0.15	1.0
		Thallium, Total	1.8	MG/KG	0.31	1.0
-004	B0V058	Arsenic, Total	3.7	MG/KG	0.23	1.0
		Lead, Total	4.0	MG/KG	0.13	1.0
		Thallium, Total	1.7	MG/KG	0.26	1.0
-005	B0V060	Arsenic, Total	3.3	MG/KG	0.27	1.0
		Lead, Total	3.8	MG/KG	0.15	1.0
		Thallium, Total	1.7	MG/KG	0.31	1.0
-006	B0V062	Arsenic, Total	2.5	MG/KG	0.30	1.0
		Lead, Total	5.5	MG/KG	0.16	1.0
		Thallium, Total	1.5	MG/KG	0.33	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/31/99

CLIENT: TNU-HANFORD B99-050 RECRA LOT #: 9903L498

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0188-MB1	Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Lead, Total	0.18 u	MG/KG	0.18	1.0
		Thallium, Total	0.37 u	MG/KG	0.37	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 03/31/99

CLIENT: TNU-HANFORD B99-050

RECRA LOT #: 9903L498

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V052	Arsenic, Total	151	2.5	160	92.6	1.0
		Arsenic, Total MSD	166	2.5	181	90.5	1.0
		Lead, Total	40.7	5.8	40.1	87.0	1.0
		Lead, Total MSD	44.9	5.8	45.2	86.5	1.0
		Thallium, Total	148	1.7	160	91.1	1.0
		Thallium, Total MSD	161	1.7	181	88.3	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 03/31/99

CLIENT: TNU-HANFORD B99-050 RECRA LOT #: 9903L498

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0V052	Arsenic, Total	92.6	90.5	2.2
		Lead, Total	87.0	86.5	0.61
		Thallium, Total	91.1	88.3	3.1

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 03/31/99

CLIENT: TNU-HANFORD B99-050 RECRA LOT #: 9903L498

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V052	Arsenic, Total	2.5	2.4	4.1	1.0
		Lead, Total	5.8	4.0	36.7	1.0
		Thallium, Total	1.7	1.5	12.5	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/31/99

CLIENT: TNU-HANFORD B99-050 RECRA LOT #: 9903L498

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0188-LC1	Arsenic, LCS	1030	1000	MG/KG	103.4
		Lead, LCS	257	250	MG/KG	102.9
		Thallium, LCS	1030	1000	MG/KG	103.4

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-050

DATE RECEIVED: 03/19/99 RFW LOT # :9903L498

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V052						
ARSENIC, TOTAL	001	S	99L0188	03/11/99	03/26/99	03/29/99
ARSENIC, TOTAL	001 REP	S	99L0188	03/11/99	03/26/99	03/29/99
ARSENIC, TOTAL	001 MS	S	99L0188	03/11/99	03/26/99	03/29/99
ARSENIC, TOTAL	001 MSD	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	001	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	001 REP	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	001 MS	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	001 MSD	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	001	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	001 REP	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	001 MS	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	001 MSD	S	99L0188	03/11/99	03/26/99	03/29/99
B0V054						
ARSENIC, TOTAL	002	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	002	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	002	S	99L0188	03/11/99	03/26/99	03/29/99
B0V056						
ARSENIC, TOTAL	003	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	003	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	003	S	99L0188	03/11/99	03/26/99	03/29/99
B0V058						
ARSENIC, TOTAL	004	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	004	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	004	S	99L0188	03/11/99	03/26/99	03/29/99
B0V060						
ARSENIC, TOTAL	005	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	005	S	99L0188	03/11/99	03/26/99	03/29/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-050

DATE RECEIVED: 03/19/99 RFW LOT # :9903L498

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
THALLIUM, TOTAL	005	S	99L0188	03/11/99	03/26/99	03/29/99
B0V062						
ARSENIC, TOTAL	006	S	99L0188	03/11/99	03/26/99	03/29/99
LEAD, TOTAL	006	S	99L0188	03/11/99	03/26/99	03/29/99
THALLIUM, TOTAL	006	S	99L0188	03/11/99	03/26/99	03/29/99

LAB QC:

ARSENIC LABORATORY	LC1 BS	S	99L0188	N/A	03/26/99	03/29/99
ARSENIC, TOTAL	MB1	S	99L0188	N/A	03/26/99	03/29/99
LEAD LABORATORY	LC1 BS	S	99L0188	N/A	03/26/99	03/29/99
LEAD, TOTAL	MB1	S	99L0188	N/A	03/26/99	03/29/99
THALLIUM LABORATORY	LC1 BS	S	99L0188	N/A	03/26/99	03/29/99
THALLIUM, TOTAL	MB1	S	99L0188	N/A	03/26/99	03/29/99

RECRA LabNet Use Only
9903L498

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals digestion

Client: INU - Hanford B99-050
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: 3/19/99 Date Due: 4/18/99
Account #:

Refrigerator #				3					3								
#/Type Container	Liquid																
	Solid			1g					1g								
Volume	Liquid																
	Solid			250					250								
Preservatives																	
ANALYSES REQUESTED →			ORGANIC						INORG								
			VOA	BNA	Pest/PCB	Herb			Metal	CN							
RECRA LabNet Use Only					spec				Metals Hot Hg 3/22/99								

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											
001	B0V052			S	3/11/99	1035			✓				✓				
2	54					1045			✓				✓				
3	56					1055			✓				✓				
4	58					1106			✓				✓				
5	60					1113			✓				✓				
6	62					1122			✓				✓				

Special Instructions:
saf #B99-050

DATE/REVISIONS:
1. Run matrix QC
2. PCBs by 8082
3. Met① = as, Tl, Pb 3/22/99 metals
4. list corrected.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # *
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. 3.6 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
* 4235795235 30

Relinquished by	Received by	Date	Time
Fed-ex	Fowler	3/19/99	0930

Relinquished by	Received by	Date	Time

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-050-02

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL Stock pile		SAF No.: B99-050
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: ~~[illegible]~~ 3-11-99 RECRA	Offsite Property No.: A99C0088		Bill of Lading/Air Bill No.: 4235795235 20
			COA: RNPACS 2600

Price Code:

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: 498

Special Handling and/or Storage

Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
B0V052	Soil	3-11-99	1035							DOV093 X	X	B0V053
B0V054	Soil	3-11-99	1045							DOV094 X	X	B0V055
B0V056	Soil	3-11-99	1055							DOV095 X	X	B0V057
B0V058	Soil	3-11-99	1106							X	X	B0V059
B0V060	Soil	3-11-99	1113							X	X	B0V061

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
D. St. John	3/18/99 12:20		
Dwight St. John for D. Bowers			
Fed Ex	3-19-99 0930	[illegible]	3-19-99/0930

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

Stored in Refrig 2 @ 3728 3/11/99 thru 03/18/99

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

LABORATORY SECTION	Received By: [illegible]	Title: Lab. Tech.	Date/Time: 3-19-99/0930
SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

014

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-050-02

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stockpile		SAF No.: B99-050
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A990 #88		Bill of Lading/Air Bill No.
			COA: RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	500mL	1000mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions	Ignitability - 1010	pH (Soil) - 9045	Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time										
B0V052	Soil	3-11-99	1035	X									B0V053
B0V054	Soil	3-11-99	1045	X									B0V055
B0V056	Soil	3-11-99	1055	X									B0V057
B0V058	Soil	3-11-99	1106	X									B0V059
B0V060	Soil	3-11-99	1113	X									B0V061

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: D St John	Date/Time: 3/18/99 12:20	Received By: [illegible]	Date/Time
David St John for D. Bowers			
Relinquished By: [illegible]	Date/Time	Received By: [illegible]	Date/Time: 3/19/99 0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Beryllium, Lead, Thallium)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

stored in refrigerator 2 @ 3728 3/11/99 - 3/18/99

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

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

015

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-050-02

Page 3 of 4 3-11-99

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stock pile		SAF No.: B99-050
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA 3-11-99	Offsite Property No.: A99C 088		Bill of Lading/Air Bill No.:

Price Code:

Data Turnaround: 45 Days

COA: RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS	Activity Scan	Gross Alpha, Gross Beta	Isotopic Uranium	See item (1) in Special Instructions	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
B0V062	Soil	3-11-99	1122								X	X	BOVC63
~~B0V064~~ 3/18/99	~~Soil~~ 3/18/99											3/18/99	
~~B0V065~~ 3/18/99	~~Soil~~ 3/18/99												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
D. St. John for D Bowers	3/18/99 12:20	overnight carrier	
Relinquished By	Date/Time	Received By	Date/Time
[illegible]		[illegible]	3/18/99 [illegible]
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

Stored in refrig 2@ 3728 3/11/99 thru 3/18/99

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-050-02	Page 4 of 4

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code	Data Turnaround: 45 Days
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stockpile		SAF No.: B99-050		
Ice Chest No.: ERC-96-016	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX		
Shipped To: ~~TMA~~/RECRA 3-4-99	Offsite Property No.: A990088		Bill of Lading/Air Bill No.: 423579523520		
			COA: RNPACS 2600		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	500mL	1000mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions	Ignitability - 1010	pH (Soil) - 9045	Metals by ICP (ICP) - 1311/6010 Mercury (ICP) - 1311/7470	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time										
B0V062	Soil	3-11-99	1122	X									B0V063
~~B0V064~~ DAS 3/18/99	~~Soil~~ DAS 3/18/99												B0V065
~~B0V066~~ DAS 3/18/99	~~Soil~~ DAS 3/18/99												B0V067

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	D St John / Dave St John / R D. Bowers	3/18/99 1220	overnight carrier	
Relinquished By	FedEx	3-19-99/0930		3-19-99/0930
Relinquished By	~~Acted~~	3/19/99		
Relinquished By				

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Thallium}
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

D. Bowers not available to relinquish samples due to schedule conflict DAS 3/18/99

DAS 3/18/99

Stored in refrig #2 @ 3728 3/11/99 - 3/18/99

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

LABORATORY SECTION	Received By	Title	Date/Time
		Lab Tech	3-19-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

017

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0363 is comprised of six solids (soil) samples designated under SAF No. B9-050 with a Project Designation of: Landfill 1D Cleanup.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. The complete data package for this SDG was sent to Bechtel Hanford via fascimillie on April 20, 1999.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analyses

The samples were reanalyzed due to very low recoveries for the initial analysis. There were no problems encountered during the processing of the second aliquot.

2.2 Gamma Scan Analyses

No problems were encountered during the processing of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

SAMPLE SUMMARY

SDG 7102
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0V052	300 FF-1 1d landfill	SOLID		N903102-01	B99-050	B99-050-02	03/11/99 10:35
B0V054	300 FF-1 1d landfill	SOLID		N903102-02	B99-050	B99-050-02	03/11/99 10:45
B0V056	300 FF-1 1d landfill	SOLID		N903102-03	B99-050	B99-050-02	03/11/99 10:55
B0V058	300 FF-1 1d landfill	SOLID		N903102-04	B99-050	B99-050-02	03/11/99 11:06
B0V060	300 FF-1 1d landfill	SOLID		N903102-05	B99-050	B99-050-02	03/11/99 11:13
B0V062	300 FF-1 1d landfill	SOLID		N903102-06	B99-050	B99-050-02	03/11/99 11:22
Method Blank		SOLID		N903102-08	B99-050		
Method Blank		SOLID		N903102-11	B99-050		
Lab Control Sample		SOLID		N903102-07	B99-050		
Lab Control Sample		SOLID		N903102-10	B99-050		
Duplicate (N903102-01)	300 FF-1 1d landfill	SOLID		N903102-09	B99-050		03/11/99 10:35
Duplicate (N903102-01)	300 FF-1 1d landfill	SOLID		N903102-12	B99-050		03/11/99 10:35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

QC SUMMARY

SDG 7102
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

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
7102	B99-050-02	B0V052	SOLID	94.8			03/19/99	8	N903102-01	7102-001
		B0V054	SOLID	95.5			03/19/99	8	N903102-02	7102-002
		B0V056	SOLID	95.4			03/19/99	8	N903102-03	7102-003
		B0V058	SOLID	96.6			03/19/99	8	N903102-04	7102-004
		B0V060	SOLID	97.3			03/19/99	8	N903102-05	7102-005
		B0V062	SOLID	95.6			03/19/99	8	N903102-06	7102-006
		Method Blank	SOLID						N903102-08	7102-008
		Method Blank	SOLID						N903102-11	7102-011
		Lab Control Sample	SOLID						N903102-07	7102-007
		Lab Control Sample	SOLID						N903102-10	7102-010
		Duplicate (N903102-01)	SOLID	94.8			03/19/99	8	N903102-09	7102-009
		Duplicate (N903102-01)	SOLID				03/19/99	8	N903102-12	7102-012

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

SDG 7102
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
U	SOLID	Uranium, Isotopic in Soil	6880-014	5.0	6			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6880-014	15.0	6			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 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

WORK SUMMARY

SDG 7102
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0V052			N903102-01	7102-001	GAM		04/13/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99	7102-001	U	A1	04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
B99-050-02	B99-050		03/19/99							
B0V054			N903102-02	7102-002	GAM		04/13/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99	7102-002	U	A1	04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
B99-050-02	B99-050		03/19/99							
B0V056			N903102-03	7102-003	GAM		04/13/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99	7102-003	U	A1	04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
B99-050-02	B99-050		03/19/99							
B0V058			N903102-04	7102-004	GAM		04/14/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99	7102-004	U	A1	04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
B99-050-02	B99-050		03/19/99							
B0V060			N903102-05	7102-005	GAM		04/14/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99	7102-005	U	A1	04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
B99-050-02	B99-050		03/19/99							
B0V062			N903102-06	7102-006	GAM		04/15/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99	7102-006	U	A1	04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
B99-050-02	B99-050		03/19/99							
Method Blank		SOLID	N903102-08	7102-008	GAM		04/15/99	04/20/99	TAH	Gamma Scan
	B99-050									
Method Blank		SOLID	N903102-11	7102-011	U		04/16/99	04/20/99	TAH	Uranium, Isotopic in Soil
	B99-050									
Lab Control Sample		SOLID	N903102-07	7102-007	GAM		04/15/99	04/20/99	TAH	Gamma Scan
	B99-050									
Lab Control Sample		SOLID	N903102-10	7102-010	U		04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
	B99-050									

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

SDG 7102
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N903102-01)			N903102-09	7102-009	GAM		04/15/99	04/20/99	TAH	Gamma Scan
300 FF-1 1d landfill		SOLID	03/11/99							
	B99-050		03/19/99							
Duplicate (N903102-01)			N903102-12	7102-012	U		04/13/99	04/20/99	TAH	Uranium, Isotopic in Soil
300 FF-1 1d landfill		SOLID	03/11/99							
	B99-050		03/19/99							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
GAM	B99-050	Gamma Scan	GAMMAHI	6			1	1	1	9
U	B99-050	Uranium, Isotopic in Soil	UPLATE	6			1	1	1	9
TOTALS				12			2	2	2	18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-08 Method Blank

METHOD BLANK

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-08	Client sample id	Method Blank
Dept sample id	7102-008	Material/Matrix	SOLID
		SAF No	B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	U		0.20		U	GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 137	10045-97-3	U		0.009	0.050	U	GAM
Europium 152	14683-23-9	U		0.020	0.10	U	GAM
Europium 154	15585-10-1	U		0.030	0.10	U	GAM
Europium 155	14391-16-3	U		0.010	0.10	U	GAM
Americium 241	14596-10-2	U		0.007		U	GAM
Uranium 238	U-238	U		1.0		U	GAM
Uranium 235	15117-96-1	U		0.020		U	GAM

Landfill 1D Cleanup

QC-BLANK 30383

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-11 Method Blank

METHOD BLANK

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-11	Client sample id	Method Blank
Dept sample id	7102-011	Material/Matrix	SOLID
		SAF No	B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.015	0.031	0.12	0.30	U	U
Uranium 235	15117-96-1	0	0.037	0.14	0.30	U	U
Uranium 238	U-238	0	0.031	0.12	0.30	U	U

Landfill 1D Cleanup

QC-BLANK 30464

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7102

Contact L.A. Johnson

Client/Case no Hanford SDG-H0363

Case no TRB-SBB-207925

Lab sample id N903102-07

Dept sample id 7102-007

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-050

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Cobalt 60	0.340	0.026	0.020	0.050		GAM	0.356	0.014	96	75-125	80-120
Cesium 137	0.410	0.024	0.020	0.050		GAM	0.381	0.015	108	73-127	80-120

Landfill 1D Cleanup

QC-LCS 30382

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-10

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7102
Contact L.A. Johnson

Client/Case no Hanford SDG-H0363
Case no TRB-SBB-207925

Lab sample id N903102-10
Dept sample id 7102-010

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-050

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	5.17	0.67	0.31	0.30		U	5.14	0.21	101	78-122	80-120
Uranium 235	3.97	0.55	0.091	0.30		U	4.20	0.17	95	78-122	80-120
Uranium 238	5.51	0.69	0.29	0.30		U	5.29	0.21	104	78-122	80-120

Landfill 1D Cleanup

QC-LCS 30463

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-09

B0V052

DUPLICATE

SDG	7102			Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N903102-09	Lab sample id	N903102-01	Client sample id	B0V052
Dept sample id	7102-009	Dept sample id	7102-001	Location/Matrix	300 FF-1 1d landfill SOLID
		Received	03/19/99	Collected	03/11/99 10:35
% solids	94.8	% solids	94.8	Custody/SAF No	B99-050-02 B99-050

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Potassium 40	15.0	0.48	0.20			GAM	14.0	0.60	0.35		7	33
Cobalt 60	U		0.020	0.050	U	GAM	U		0.029	U	-	
Cesium 137	U		0.020	0.050	U	GAM	U		0.025	U	-	
Europium 152	U		0.050	0.10	U	GAM	U		0.056	U	-	
Europium 154	U		0.080	0.10	U	GAM	U		0.096	U	-	
Europium 155	U		0.050	0.10	U	GAM	U		0.048	U	-	
Radium 226	0.540	0.043	0.040	0.10		GAM	0.554	0.056	0.051		3	37
Radium 228	0.670	0.093	0.10	0.20		GAM	0.705	0.12	0.12		5	46
Thorium 228	0.700	0.026	0.020			GAM	0.669	0.028	0.027		5	33
Thorium 232	0.670	0.093	0.10			GAM	0.705	0.12	0.12		5	46
Americium 241	U		0.080		U	GAM	U		0.032	U	-	
Uranium 238	U		3.0		U	GAM	U		3.3	U	-	
Uranium 235	U		0.090		U	GAM	U		0.076	U	-	

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-12 B0V052

DUPLICATE

SDG	7102			Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N903102-12	Lab sample id	N903102-01	Client sample id	B0V052
Dept sample id	7102-012	Dept sample id	7102-001	Location/Matrix	300 FF-1 1d landfill SOLID
		Received	03/19/99	Collected	03/11/99 10:35
		% solids	94.8	Custody/SAF No	B99-050-02 B99-050

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Uranium 233/234	0.664	0.16	0.071	0.30		U	0.730	0.18	0.073		9	53	
Uranium 235	0.011	0.022	0.085	0.30	U	U	0	0.023	0.088	U	-		
Uranium 238	0.803	0.18	0.071	0.30		U	0.702	0.18	0.073		13	52	

Landfill 1D Cleanup

QC-DUP#1 30465

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-01

B0V052

DATA SHEET

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-01	Client sample id	B0V052
Dept sample id	7102-001	Location/Matrix	300 FF-1 1d landfill SOLID
Received	03/19/99	Collected	03/11/99 10:35
% solids	94.8	Custody/SAF No	B99-050-02 B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.730	0.18	0.073	0.30		U
Uranium 235	15117-96-1	0	0.023	0.088	0.30	U	U
Uranium 238	U-238	0.702	0.18	0.073	0.30		U
Potassium 40	13966-00-2	14.0	0.60	0.35			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.025	0.050	U	GAM
Europium 152	14683-23-9	U		0.056	0.10	U	GAM
Europium 154	15585-10-1	U		0.096	0.10	U	GAM
Europium 155	14391-16-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	0.554	0.056	0.051	0.10		GAM
Radium 228	15262-20-1	0.705	0.12	0.12	0.20		GAM
Thorium 228	14274-82-9	0.669	0.028	0.027			GAM
Thorium 232	TH-232	0.705	0.12	0.12			GAM
Americium 241	14596-10-2	U		0.032		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Uranium 235	15117-96-1	U		0.076		U	GAM

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-02 B0V054

DATA SHEET

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-02	Client sample id	B0V054
Dept sample id	7102-002	Location/Matrix	300 FF-1 1d landfill SOLID
Received	03/19/99	Collected	03/11/99 10:45
% solids	95.5	Custody/SAF No	B99-050-02 B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.646	0.17	0.097	0.30		U
Uranium 235	15117-96-1	0.061	0.049	0.093	0.30	U	U
Uranium 238	U-238	0.464	0.15	0.077	0.30		U
Potassium 40	13966-00-2	13.6	0.53	0.25			GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Cesium 137	10045-97-3	U		0.023	0.050	U	GAM
Europium 152	14683-23-9	U		0.058	0.10	U	GAM
Europium 154	15585-10-1	U		0.082	0.10	U	GAM
Europium 155	14391-16-3	U		0.060	0.10	U	GAM
Radium 226	13982-63-3	0.496	0.047	0.047	0.10		GAM
Radium 228	15262-20-1	0.647	0.13	0.13	0.20		GAM
Thorium 228	14274-82-9	0.642	0.028	0.028			GAM
Thorium 232	TH-232	0.647	0.13	0.13			GAM
Americium 241	14596-10-2	U		0.089		U	GAM
Uranium 238	U-238	U		3.1		U	GAM
Uranium 235	15117-96-1	U		0.095		U	GAM

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-03 B0V056

DATA SHEET

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-03	Client sample id	B0V056
Dept sample id	7102-003	Location/Matrix	300 FF-1 1d landfill SOLID
Received	03/19/99	Collected	03/11/99 10:55
% solids	95.4	Custody/SAF No	B99-050-02 B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.680	0.17	0.067	0.30		U
Uranium 235	15117-96-1	0.042	0.042	0.081	0.30	U	U
Uranium 238	U-238	0.810	0.19	0.067	0.30		U
Potassium 40	13966-00-2	14.3	0.35	0.15			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	0.033	0.013	0.015	0.050	J	GAM
Europium 152	14683-23-9	U		0.034	0.10	U	GAM
Europium 154	15585-10-1	U		0.049	0.10	U	GAM
Europium 155	14391-16-3	U		0.063	0.10	U	GAM
Radium 226	13982-63-3	0.551	0.030	0.026	0.10		GAM
Radium 228	15262-20-1	0.772	0.066	0.062	0.20		GAM
Thorium 228	14274-82-9	0.717	0.020	0.018			GAM
Thorium 232	TH-232	0.772	0.066	0.062			GAM
Americium 241	14596-10-2	U		0.047		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	0.053	0.044	0.063		U	GAM

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-04

B0V058

DATA SHEET

SDG	7102	Client/Case no	Hanford	SDG-H0363	
Contact	L.A. Johnson	Case no	TRB-SBB-207925		
Lab sample id	N903102-04	Client sample id	B0V058		
Dept sample id	7102-004	Location/Matrix	300 FF-1 1d landfill	SOLID	
Received	03/19/99	Collected	03/11/99 11:06		
% solids	96.6	Custody/SAF No	B99-050-02	B99-050	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.696	0.17	0.077	0.30		U
Uranium 235	15117-96-1	0.049	0.049	0.093	0.30	U	U
Uranium 238	U-238	0.676	0.17	0.077	0.30		U
Potassium 40	13966-00-2	12.9	0.26	0.11			GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 137	10045-97-3	U		0.009	0.050	U	GAM
Europium 152	14683-23-9	U		0.027	0.10	U	GAM
Europium 154	15585-10-1	U		0.036	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.520	0.022	0.020	0.10		GAM
Radium 228	15262-20-1	0.761	0.051	0.047	0.20		GAM
Thorium 228	14274-82-9	0.729	0.016	0.014			GAM
Thorium 232	TH-232	0.761	0.051	0.047			GAM
Americium 241	14596-10-2	U		0.036		U	GAM
Uranium 238	U-238	U		1.4		U	GAM
Uranium 235	15117-96-1	U		0.046		U	GAM

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-05

B0V060

DATA SHEET

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-05	Client sample id	B0V060
Dept sample id	7102-005	Location/Matrix	300 FF-1 1d landfill SOLID
Received	03/19/99	Collected	03/11/99 11:13
% solids	97.3	Custody/SAF No	B99-050-02 B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.682	0.18	0.080	0.30		U
Uranium 235	15117-96-1	0.063	0.051	0.097	0.30	U	U
Uranium 238	U-238	0.682	0.18	0.080	0.30		U
Potassium 40	13966-00-2	14.0	0.48	0.26			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.021	0.050	U	GAM
Europium 152	14683-23-9	U		0.046	0.10	U	GAM
Europium 154	15585-10-1	U		0.077	0.10	U	GAM
Europium 155	14391-16-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	0.561	0.048	0.043	0.10		GAM
Radium 228	15262-20-1	0.642	0.092	0.098	0.20		GAM
Thorium 228	14274-82-9	0.727	0.023	0.022			GAM
Thorium 232	TH-232	0.642	0.092	0.098			GAM
Americium 241	14596-10-2	U		0.025		U	GAM
Uranium 238	U-238	U		2.7		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

N903102-06 B0V062

DATA SHEET

SDG	7102	Client/Case no	Hanford SDG-H0363
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903102-06	Client sample id	B0V062
Dept sample id	7102-006	Location/Matrix	300 FF-1 1d landfill SOLID
Received	03/19/99	Collected	03/11/99 11:22
% solids	95.6	Custody/SAF No	B99-050-02 B99-050

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	1.03	0.21	0.072	0.30		U
Uranium 235	15117-96-1	0.034	0.046	0.087	0.30	U	U
Uranium 238	U-238	0.742	0.18	0.072	0.30		U
Potassium 40	13966-00-2	14.8	0.54	0.24			GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Cesium 137	10045-97-3	0.029	0.018	0.023	0.050	J	GAM
Europium 152	14683-23-9	U		0.052	0.10	U	GAM
Europium 154	15585-10-1	U		0.091	0.10	U	GAM
Europium 155	14391-16-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	0.556	0.049	0.046	0.10		GAM
Radium 228	15262-20-1	0.778	0.11	0.10	0.20		GAM
Thorium 228	14274-82-9	0.680	0.027	0.026			GAM
Thorium 232	TH-232	0.778	0.11	0.10			GAM
Americium 241	14596-10-2	U		0.030		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Uranium 235	15117-96-1	U		0.072		U	GAM

Landfill 1D Cleanup

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

Test U Matrix SOLID
SDG 7102
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6880-014											
B0V052	N903102-01		A1	7102-001	0.730	U	0.702	104	37	0	3
B0V054	N903102-02		A1	7102-002	0.646	U	0.464	139	58	13	11
B0V056	N903102-03		A1	7102-003	0.680	U	0.810	84	29	5	5
B0V058	N903102-04		A1	7102-004	0.696	U	0.676	103	36	7	7
B0V060	N903102-05		A1	7102-005	0.682	U	0.682	100	37	9	8
B0V062	N903102-06		A1	7102-006	1.03	U	0.742	139	44	5	6
BLK (QC ID=30464)	N903102-11			7102-011	U	U	U				
LCS (QC ID=30463)	N903102-10			7102-010	ok	ok	ok				
Duplicate (N903102-01)	N903102-12			7102-012	ok	- U	ok	83	27	1	3
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
Landfill 1D Cleanup							Averages	107		6	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-014	2σ prep error 5.0 %			Reference Lab Notebook 6880 pg.14												
B0V052	N903102-01		A1	0.088	1.00			80		152			33	04/12/99	04/13	SS-057
B0V054	N903102-02		A1	0.097	1.00			77		152			33	04/12/99	04/13	SS-059
B0V056	N903102-03		A1	0.081	1.00			86		152			33	04/12/99	04/13	SS-060
B0V058	N903102-04		A1	0.093	1.00			74		152			33	04/12/99	04/13	SS-061
B0V060	N903102-05		A1	0.097	1.00			75		152			33	04/12/99	04/13	SS-062
B0V062	N903102-06		A1	0.087	1.00			81		152			33	04/12/99	04/13	SS-063
BLK (QC ID=30464)	N903102-11			0.14	1.00			44		174				04/16/99	04/16	SS-005
LCS (QC ID=30463)	N903102-10			0.31	1.00			77		152				04/12/99	04/13	SS-065
Duplicate (N903102-01) (QC ID=30465)	N903102-12			0.085	1.00			83		152			33	04/12/99	04/13	SS-066
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

Test	U
Matrix	SOLID
SDG	7102
Contact	L.A. Johnson

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0363

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.12	±	0.15
FOR 9 SAMPLES	YIELD	75	±	25

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

Test GAM Matrix SOLID	Client Hanford
SDG 7102	Contract TRB-SBB-207925
Contact L.A. Johnson	Case no SDG-H0363

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6880-014						
B0V052	N903102-01			7102-001	U	U
B0V054	N903102-02			7102-002	U	U
B0V056	N903102-03			7102-003	U	0.033 J
B0V058	N903102-04			7102-004	U	U
B0V060	N903102-05			7102-005	U	U
B0V062	N903102-06			7102-006	U	0.029 J
BLK (QC ID=30383)	N903102-08			7102-008	U	U
LCS (QC ID=30382)	N903102-07			7102-007	ok	ok
Duplicate (N903102-01)	N903102-09			7102-009	- U	- U
Nominal values and limits from method Landfill 1D Cleanup				RDLs (pCi/g)	0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-014 2σ prep error 15.0 % Reference Lab Notebook 6880 pg.14																
B0V052	N903102-01			0.085	694					448			33	03/31/99	04/13	02,01,00
B0V054	N903102-02			0.060	690					448			33	03/31/99	04/13	02,03,00
B0V056	N903102-03			0.041	648					448			33	03/31/99	04/13	02,04,00
B0V058	N903102-04			0.032	747					647			34	03/31/99	04/14	02,04,00
B0V060	N903102-05			0.066	773					614			34	03/31/99	04/14	02,01,00
B0V062	N903102-06			0.075	741					473			35	03/31/99	04/15	02,01,00
BLK (QC ID=30383)	N903102-08			0.020	750					570				03/31/99	04/15	01,01,00
LCS (QC ID=30382)	N903102-07			0.020	750					473				03/31/99	04/15	01,03,00
Duplicate (N903102-01) (QC ID=30384)	N903102-09			0.060	694					570			35	03/31/99	04/15	02,03,00
Nominal values and limits from method				0.050	750					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0363

Test	GAM
Matrix	SOLID
SDG	7102
Contact	L.A. Johnson

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0363

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD	MDA	0.051	±	0.047
FOR 9 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/20/99

SDG 7102
Contact L.A. Johnson

Client Hanford
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Case no SDG-H0363

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/20/99

SDG 7102
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

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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SDG 7102
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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

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.

Client Hanford
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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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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.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0363

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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REPORT GUIDE

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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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METHOD SUMMARY

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.

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********** -COMM. JOURNAL- ********** DATE APR-20-1999 ***** TIME 20:20 *** P.01

MODE = MEMORY TRANSMISSION START=APR-20 20:14 END=APR-20 20:20

FILE NO.= 056

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-THERMO NU-TECH -

********** -RICHMOND CA - ***** - 15102350438- *********

Thermo NuTech

2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 • FAX (510) 235-0438

Facsimile Cover Sheet

Date: 4-20-99

TO: Company Name: BHI

Individual: Joan Kessner

Fax Number:

Telephone #:

FROM: TERRIE HIGGINS

Number of pages being sent (including this page): 19

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Operator Name: KV

Comments: JOAN,
This is the completed data package for SDG H0363, SAF 899050.

Thermo NUtech
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 • FAX (510) 235-0438

Facsimile Cover Sheet

Date: 4-20-99

TO: Company Name: BHI

Individual: Joan Kessner

Fax Number:

Telephone #:

FROM: TERRIE HIGGINS

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Operator Name: KP

Comments: JOAN,
This is the completed data package for SDG H0363, SAF B99050.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-050-02	Page 1 of 4

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator TRENT, SJ
Project Designation Landfill 1D Cleanup	Sampling Location 300 FF-1 1D landfill BCL Stack pile		SAF No. B99-050
Ice Chest No. JML-264	Field Logbook No. EL 1395-2		Method of Shipment FED EX
Shipped To TMA/~~RECRA~~ BJO 3-11-99	Offsite Property No. A990086		Bill of Lading/Air Bill No. 4235795234 93
			COA RNPACS 2600

Price Code

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)
B0V052	Soil	3-11-99	1035	X		X				~~B0V053~~			
B0V054	Soil	3-11-99	1045	X		X				BJ 3-11-99			
B0V056	Soil	3-11-99	1055	X		X				B			
B0V058	Soil	3-11-99	1106	X		X							
B0V060	Soil	3-11-99	1113	X		X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By D. St. John Date/Time 3/18/99 12:20	Received By Overnight Carrier	Date/Time	
Relinquished By Fed Ex 3-19-99 10:00	Received By [illegible] 3-19-99	Date/Time 10:00	
Relinquished By	Received By	Date/Time	
Relinquished By	Received By	Date/Time	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

D. Bowers not available to relinquish samples to overnight carrier due to schedule conflict DAS 3/18/99

Stored in Refrig 2 @ 3728 3/11/99 thru 3/18/99

Matrix *
Soil
Water
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	B99-050-02	Page 2 of 4

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stockpile		SAF No.: B99-050
Ice Chest No.: SML 264	Field Logbook No.: EL 1395-2		Method of Shipment: FED EX
Shipped To: TMA/~~RCRA~~ DJB 3-11-99	Offsite Property No.: A990006		Bill of Lading/Air Bill No.: 4235795234 93
			COA: RNPACS 2600

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	500mL	1000mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Ignitability - 1010	pH (Soil) - 9045	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
B0V052	Soil	3-11-99	1035					X	✓				B0V053
B0V054	Soil	3-11-99	1045					X	✓				B0V055
B0V056	Soil	3-11-99	1055					X					B0V057
B0V058	Soil	3-11-99	1106					X					B0V059
B0V060	Soil	3-11-99	1113					X					B0V061

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: D. St John	Date/Time: 3/18/99 12:20	Received By: overnight carrier	Date/Time
Relinquished By: David St John for D. Bowers	Date/Time	Received By	Date/Time 10:4
Relinquished By: Fed Ex	Date/Time: 3-19-99 10:00	Received By: A.C. Corso JR Corso	Date/Time: 3-19-99
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Thallium}
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

D. Bowers not available to relinquish samples to overnight carrier due to schedule conflict DJS 3/18/99

Stored in Refrig 2 @ 3728 3/11/99 thru 3/18/99

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	B99-050-02	Page 3 of 4

Collector: Doug Bowers	Company Contact: Jeff Lerch — Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code:	Data Turnaround: 45 Days
Project Designation: Landfill 1D Cleanup	Sampling Location: 300 FF-1 1D landfill BCL stock pile	SAF No.: B99-050		
Ice Chest No.: SML-264	Field Logbook No.: EL 1395-2	Method of Shipment: FED EX		
Shipped To: TMA/~~RECRA~~	Offsite Property No.: A990086	Bill of Lading/Air Bill No.: 423579523493		
		COA: RWPACS 2600		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	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	60mL	60mL	60mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL
SAMPLE ANALYSIS		Activity Scan	Gross Alpha; Gross Beta	Isotopic Uranium	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	Mercury - 7471 - (CV)	Pest/PCBs - 8080 (TCL)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)
Sample No.	Matrix *	Sample Date	Sample Time								
B0V062	Soil	3-11-99	1122	X		X					
~~B0V064~~ WSF	~~Soil~~ WSF										
~~B0V066~~ 3/18/99	~~Soil~~ 3/18/99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: D. St John for D. Bowers	Date/Time: 3/18/99 12:20	Received By: Overnight Carrier	Date/Time:
Relinquished By: Fed Ex	Date/Time: 3-19-99 10:00	Received By: J R Como	Date/Time: 3-19-99 10:00
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

D. Bowers not available to relinquish samples to overnight carrier due to schedule conflict DAS 3/18/99

Stored in Refrig. 2@3728 3/11/99 thru 3/18/99

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	B99-050-02	Page 4 of 4

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 45 Days
Project Designation Landfill 1D Cleanup	Sampling Location 300 FF-1 1D landfill BCL Stock pile		SAF No. B99-050		
Ice Chest No. SML-264	Field Logbook No. EL 1395-2		Method of Shipment FED EX		
Shipped To TMA/~~RECRA~~ KD 3-11-99	Offsite Property No. A990086		Bill of Lading/Air Bill No. 4235 7952 3493		
			COA RNPACS 2600		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None					
	Type of Container	nG	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
Special Handling and/or Storage	Volume	250mL	250mL	250mL	500mL	1000mL					
SAMPLE ANALYSIS		See item (1) in Special Instructions.	Ignitability - 1010	pH (Soil) - 9045	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time										
B0V062	Soil	3-11-99	1122					X					B0V063
~~B0V064~~ WSF 3/18/99	~~Soil~~ WSF 3/18/99												~~B0V065~~
~~B0V066~~	~~Soil~~										WSF 3/18/99		~~B0V067~~

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By D. St. John / David Stafford for D. Bowers	Date/Time 3/18/99 12:20	Received By Overnight Carrier	Date/Time
Relinquished By Fed Ex	Date/Time 3-19-99 10:00	Received By [illegible]	Date/Time 3-19-99 10:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Thallium}
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

D. Bowers not available to relinquish samples to overnight carrier due to sched conflict DJS 3/18/99

Stored in Refrigerator 2 @ 3728 3/11/99 thru 3/18/99

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI - HANFORD		A990086

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ERC ENGINEERING SUPPORT	FIELD ANALYTICAL SUPPORT	FIELD SAMPLING

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing FEDERAL EXPRESS ☒ Prepaid ☐ Collect

Shipped to THERMO NUTEC
Company 2030 WRIGHT AVE,
Address RICHMOND CA. 94804-0040
City 510 235 2633 State Zip Code
Country ATTN LARRY JOHNSON

Off-site Custodian

On-site Custodian Payroll No.

Qty.	Property No.	Description (Include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	46 LBS	SAMPLE #S: BOV052, BOV054, BOV056, BOV058 BOV060, BOV 1B6, ICE CHEST # SML 264 POLYCOOLER WITH ENVIRONMENTAL SAMPLES PACKED WITH PACKING PEANUTS BILL OF LAIDING # 423579523493	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☐ Other (Please specify) _____

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date

Location of and Contact for Property (Name/Phone No./Bldg./Area)
SJ GALE 509 372 9701 3728 BLDG / 300 AREA

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3-18-99	RNPACS 2600	

Originated By	Date	Authorized By	Date
[signature]	3-18-99	[signature]	3 18 99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
[signature]	3/18/99	[signature]	3/18/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

54-3000-479 (01/94)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 3-19-99 10:00

CoC No. B99-045-05, (B99-050-02, 1 of 4 CoC's) 15

Container I.D. No. SML-164 Requested TAT (Days) 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: 7
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 JRCarso Date: 3-19-99 Time: 10:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____