H1107

0054583

DEC 2000
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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1107 was composed of four other solid samples designated under SAF No. B99-029 with a Project Designation of: 100-KR-4 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 14 and 27, 2000.

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MAR 28 2001
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2.0 ANALYSIS NOTES

2.1 *Isotopic Uranium Analyses*

No problems were encountered during the course of the analyses

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Tritium Analyses

The tritium samples were realiquoted due to contamination in the run blanks ran with the samples on the Oxidizer (Packard Model 307). No problems were encountered during the course of the reanalyses.

Case Narrative Certification Statement

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

Melissa Mannion
Melissa C. Mannion
Program Manager

12/28/00
Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

SAMPLE SUMMARY

SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1107

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10ML2	100-KR-4	SOLID		R010183-01	B99-029	B99-029-60	10/26/00 12:42
B10ML3	100-KR-4	SOLID		R010183-02	B99-029	B99-029-60	10/26/00 12:50
B10ML4	100-KR-4	SOLID		R010183-03	B99-029	B99-029-60	10/26/00 13:08
B10ML5	100-KR-4	SOLID		R010183-04	B99-029	B99-029-60	10/26/00 13:23
Method Blank		SOLID		R010183-06	B99-029		
Method Blank		SOLID		R010183-09	B99-029		
Lab Control Sample		SOLID		R010183-05	B99-029		
Lab Control Sample		SOLID		R010183-08	B99-029		
Duplicate (R010183-02)	100-KR-4	SOLID		R010183-07	B99-029		10/26/00 12:50
Duplicate (R010183-02)	100-KR-4	SOLID		R010183-10	B99-029		10/26/00 12:50

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

QC SUMMARY

SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1107

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
7539	B99-029-60	B10ML2	SOLID	100.0			10/31/00	5	R010183-01	7539-001
		B10ML3	SOLID	100.0			10/31/00	5	R010183-02	7539-002
		B10ML4	SOLID	100.0			10/31/00	5	R010183-03	7539-003
		B10ML5	SOLID	100.0			10/31/00	5	R010183-04	7539-004
		Method Blank	SOLID						R010183-06	7539-006
		Method Blank	SOLID						R010183-09	7539-009
		Lab Control Sample	SOLID						R010183-05	7539-005
		Lab Control Sample	SOLID						R010183-08	7539-008
		Duplicate (R010183-02)	SOLID	100.0			10/31/00	5	R010183-07	7539-007
		Duplicate (R010183-02)	SOLID	100.0			10/31/00	5	R010183-10	7539-010

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 12/27/00

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SAMPLE DELIVERY GROUP H1107

PREP BATCH SUMMARY

SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1107

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	6962-027	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6962-027	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6962-027	10.0	4			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6962-027	10.0	4			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 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

WORK SUMMARY

SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1107

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10ML2			R010183-01	7539-001	H	A1	12/06/00	12/14/00	MCM	Tritium in Soil
100-KR-4		SOLID	10/26/00	7539-001	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
B99-029-60	B99-029		10/31/00	7539-001	TC		12/19/00	12/27/00	MCM	Technetium 99 in Soil
				7539-001	U		11/15/00	12/14/00	MCM	Uranium, Isotopic in Soil
B10ML3			R010183-02	7539-002	H	A1	12/06/00	12/14/00	MCM	Tritium in Soil
100-KR-4		SOLID	10/26/00	7539-002	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
B99-029-60	B99-029		10/31/00	7539-002	TC		12/16/00	12/27/00	MCM	Technetium 99 in Soil
				7539-002	U		11/17/00	12/14/00	MCM	Uranium, Isotopic in Soil
B10ML4			R010183-03	7539-003	H	A1	12/06/00	12/14/00	MCM	Tritium in Soil
100-KR-4		SOLID	10/26/00	7539-003	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
B99-029-60	B99-029		10/31/00	7539-003	TC		12/16/00	12/27/00	MCM	Technetium 99 in Soil
				7539-003	U		11/17/00	12/14/00	MCM	Uranium, Isotopic in Soil
B10ML5			R010183-04	7539-004	H	A1	12/06/00	12/14/00	MCM	Tritium in Soil
100-KR-4		SOLID	10/26/00	7539-004	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
B99-029-60	B99-029		10/31/00	7539-004	TC		12/20/00	12/27/00	MCM	Technetium 99 in Soil
				7539-004	U		11/17/00	12/14/00	MCM	Uranium, Isotopic in Soil
Method Blank			R010183-06	7539-006	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
		SOLID		7539-006	TC		12/20/00	12/27/00	MCM	Technetium 99 in Soil
	B99-029			7539-006	U		11/17/00	12/14/00	MCM	Uranium, Isotopic in Soil
Method Blank			R010183-09	7539-009	H		12/06/00	12/14/00	MCM	Tritium in Soil
		SOLID								
	B99-029									
Lab Control Sample			R010183-05	7539-005	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
		SOLID		7539-005	TC		12/19/00	12/27/00	MCM	Technetium 99 in Soil
	B99-029			7539-005	U		11/17/00	12/14/00	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R010183-08	7539-008	H		12/07/00	12/14/00	MCM	Tritium in Soil
		SOLID								
	B99-029									
Duplicate (R010183-02)			R010183-07	7539-007	SR		11/17/00	12/14/00	MCM	Total Strontium in Soil
100-KR-4		SOLID	10/26/00	7539-007	TC		12/19/00	12/27/00	MCM	Technetium 99 in Soil
	B99-029		10/31/00	7539-007	U		11/17/00	12/14/00	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

SDG 7539
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1107

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R010183-02)			R010183-10	7539-010	H		12/06/00	12/14/00	MCM	Tritium in Soil
100-KR-4		SOLID	10/26/00							
	B99-029		10/31/00							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-029	Tritium in Soil	TRITIUM_COX_LSC	4			1	1	1	7
SR	B99-029	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1	7
TC	B99-029	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1	7
U	B99-029	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1	7
TOTALS				16			4	4	4	28

Lab id TMANC
Protocol Hanford
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Form DVD-CWS
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Report date 12/27/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1107

R010183-06 Method Blank

METHOD BLANK

SDG	7539	Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R010183-06	Client sample id	Method Blank
Dept sample id	7539-006	Material/Matrix	SOLID
		SAF No	B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.049	0.11	0.24	1.0	U	SR
Technetium 99	14133-76-7	-0.091	0.17	0.55	15	U	TC
Uranium 233	U-233/234	0.012	0.048	0.091	1.0	U	U
Uranium 235	15117-96-1	-0.014	0.029	0.11	1.0	U	U
Uranium 238	U-238	-0.012	0.024	0.091	1.0	U	U

100-KR-4 Pump & Treat - Resin Smpl.

QC-BLANK 36510

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/27/00

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SAMPLE DELIVERY GROUP H1107

R010183-09 **Method Blank**

METHOD BLANK

SDG	7539	Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R010183-09	Client sample id	Method Blank
Dept sample id	7539-009	Material/Matrix	SOLID
		SAF No	B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.598	3.8	6.5	400	U	H

100-KR-4 Pump & Treat - Resin Smpl.

QC-BLANK 36737

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7539
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1107
Case no TRC-SBB-207925

Lab sample id R010183-05
Dept sample id 7539-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-029

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
Total Strontium	23.5	0.86	0.24	1.0		SR	22.0	0.88	107	82-118	80-120
Technetium 99	112	3.6	0.98	15		TC	109	4.4	103	83-117	80-120
Uranium 233	9.14	0.81	0.38	1.0		U	9.29	0.37	98	84-116	80-120
Uranium 235	7.29	0.70	0.079	1.0		U	7.55	0.30	97	83-117	80-120
Uranium 238	10.4	0.88	0.36	1.0		U	10.1	0.40	103	84-116	80-120

100-KR-4 Pump & Treat - Resin Smpl.

QC-LCS 36509

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG	7539	Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
Lab sample id	R010183-08	Client sample id	Lab Control Sample
Dept sample id	7539-008	Material/Matrix	SOLID
		SAF No	B99-029

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
Tritium	1450	21	6.2	400		H	1490	60	97	84-116	80-120

100-KR-4 Pump & Treat - Resin Smpl.

QC-LCS 36736

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LCS
Version	3.06
Report date	12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-07 B10ML3

DUPLICATE

SDG	7539			Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	R010183-07	Lab sample id	R010183-02	Client sample id	B10ML3
Dept sample id	7539-007	Dept sample id	7539-002	Location/Matrix	100-KR-4 SOLID
		Received	10/31/00	Collected	10/26/00 12:50
% solids	100.0	% solids	100.0	Custody/SAF No	B99-029-60 B99-029

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
Total Strontium	-0.053	0.097	0.21	1.0	U	SR	0.046	0.11	0.21	U	-		
Technetium 99	-0.116	0.51	1.6	15	U	TC	-0.021	0.43	1.4	U	-		
Uranium 233	0.087	0.075	0.095	1.0	U	U	0.143	0.068	0.064	J	49	132	
Uranium 235	0.045	0.060	0.12	1.0	U	U	0	0.020	0.078	U	-		
Uranium 238	0.075	0.050	0.095	1.0	U	U	0.067	0.051	0.064	J	11	151	

100-KR-4 Pump & Treat - Resin Smpl.

QC-DUP#2 36511

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-10 B10ML3

DUPLICATE

SDG	7539			Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	R010183-10	Lab sample id	R010183-02	Client sample id	B10ML3
Dept sample id	7539-010	Dept sample id	7539-002	Location/Matrix	100-KR-4 SOLID
		Received	10/31/00	Collected	10/26/00 12:50
% solids	100.0	% solids	100.0	Custody/SAF No	B99-029-60 B99-029

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
Tritium	26.1	4.5	6.1	400	J	H	25.6	4.5	6.1	J	2	43	

100-KR-4 Pump & Treat - Resin Smpl.

QC-DUP#2A1 36738

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-01 **B10ML2**

DATA SHEET

SDG	7539	Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R010183-01	Client sample id	B10ML2
Dept sample id	7539-001	Location/Matrix	100-KR-4 SOLID
Received	10/31/00	Collected	10/26/00 12:42
% solids	100.0	Custody/SAF No	B99-029-60 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	14.4	4.2	6.2	400	J	H
Total Strontium	SR-RAD	-0.049	0.089	0.16	1.0	U	SR
Technetium 99	14133-76-7	-0.113	0.39	1.4	15	U	TC
Uranium 233	U-233/234	0.228	0.14	0.13	1.0	J	U
Uranium 235	15117-96-1	0.021	0.043	0.16	1.0	U	U
Uranium 238	U-238	0.053	0.070	0.13	1.0	U	U

100-KR-4 Pump & Treat - Resin Smpl.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/27/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-02 **B10ML3**

DATA SHEET

SDG	7539	Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R010183-02	Client sample id	B10ML3
Dept sample id	7539-002	Location/Matrix	100-KR-4 SOLID
Received	10/31/00	Collected	10/26/00 12:50
% solids	100.0	Custody/SAF No	B99-029-60 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	25.6	4.5	6.1	400	J	H
Total Strontium	SR-RAD	0.046	0.11	0.21	1.0	U	SR
Technetium 99	14133-76-7	-0.021	0.43	1.4	15	U	TC
Uranium 233	U-233/234	0.143	0.068	0.064	1.0	J	U
Uranium 235	15117-96-1	0	0.020	0.078	1.0	U	U
Uranium 238	U-238	0.067	0.051	0.064	1.0	J	U

100-KR-4 Pump & Treat - Resin Smpl.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/27/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1107

R010183-03 **B10ML4**

DATA SHEET

SDG	7539	Client/Case no	Hanford SDG H1107
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R010183-03	Client sample id	B10ML4
Dept sample id	7539-003	Location/Matrix	100-KR-4 SOLID
Received	10/31/00	Collected	10/26/00 13:08
% solids	100.0	Custody/SAF No	B99-029-60 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	12.7	4.0	6.1	400	J	H
Total Strontium	SR-RAD	0.061	0.11	0.21	1.0	U	SR
Technetium 99	14133-76-7	1.75	0.68	1.5	15	J	TC
Uranium 233	U-233/234	1.44	0.22	0.071	1.0		U
Uranium 235	15117-96-1	0.108	0.054	0.069	1.0	J	U
Uranium 238	U-238	0.875	0.17	0.057	1.0	J	U

100-KR-4 Pump & Treat - Resin Smpl.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/27/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1107

R010183-04 B10ML5

DATA SHEET

SDG	7539	Client/Case no	Hanford	SDG H1107	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010183-04	Client sample id	B10ML5		
Dept sample id	7539-004	Location/Matrix	100-KR-4	SOLID	
Received	10/31/00	Collected	10/26/00 13:23		
% solids	100.0	Custody/SAF No	B99-029-60	B99-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	11.7	4.3	6.5	400	J	H
Total Strontium	SR-RAD	0.053	0.12	0.23	1.0	U	SR
Technetium 99	14133-76-7	0.599	1.2	1.1	15	U	TC
Uranium 233	U-233/234	1.26	0.24	0.071	1.0		U
Uranium 235	15117-96-1	0.078	0.067	0.085	1.0	U	U
Uranium 238	U-238	0.849	0.19	0.071	1.0	J	U

100-KR-4 Pump & Treat - Resin Smpl.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1107

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6962-027											
B10ML2	R010183-01			7539-001	0.228 J	U	U				
B10ML3	R010183-02			7539-002	0.143 J	U	0.067 J	213	191	0	30
B10ML4	R010183-03			7539-003	1.44	0.108 J	0.875 J	165	41	12	7
B10ML5	R010183-04			7539-004	1.26	U	0.849 J	148	44	9	8
BLK (QC ID=36510)	R010183-06			7539-006	U	U	U				
LCS (QC ID=36509)	R010183-05			7539-005	ok	ok	ok				
Duplicate (R010183-02)	R010183-07			7539-007	ok U	- U	ok U				
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-KR-4 Pump & Treat - Resin Smpl.								Averages 175		7	

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 6962-027 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 027																
B10ML2	R010183-01			0.16	1.01			87		100			20	11/15/00	11/15	SS-019
B10ML3	R010183-02			0.078	1.06			87		148			22	11/15/00	11/17	SS-034
B10ML4	R010183-03			0.071	1.12			94		149			22	11/15/00	11/17	SS-035
B10ML5	R010183-04			0.085	1.02			89		149			22	11/15/00	11/17	SS-036
BLK (QC ID=36510)	R010183-06			0.11	1.00			68		149				11/15/00	11/17	SS-041
LCS (QC ID=36509)	R010183-05			0.38	1.00			94		149				11/15/00	11/17	SS-038
Duplicate (R010183-02) (QC ID=36511)	R010183-07			0.12	1.08			59		149			22	11/15/00	11/17	SS-042
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.14 ± 0.22
YIELD 83 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1107

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6962-027						
B10ML2	R010183-01			7539-001	U	
B10ML3	R010183-02			7539-002	U	
B10ML4	R010183-03			7539-003	U	
B10ML5	R010183-04			7539-004	U	
BLK (QC ID=36510)	R010183-06			7539-006	U	
LCS (QC ID=36509)	R010183-05			7539-005	ok	
Duplicate (R010183-02)	R010183-07			7539-007	-	U
Nominal values and limits from method 100-KR-4 Pump & Treat - Resin Smpl.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 6962-027 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 027																
B10ML2	R010183-01			0.16	1.04			85		200			22	11/17/00	11/17	GRB-217
B10ML3	R010183-02			0.21	1.12			92		100			22	11/17/00	11/17	GRB-217
B10ML4	R010183-03			0.21	1.14			90		100			22	11/17/00	11/17	GRB-218
B10ML5	R010183-04			0.23	1.06			89		100			22	11/17/00	11/17	GRB-219
BLK (QC ID=36510)	R010183-06			0.24	1.00			88		100				11/17/00	11/17	GRB-222
LCS (QC ID=36509)	R010183-05			0.24	1.00			89		100				11/17/00	11/17	GRB-217
Duplicate (R010183-02) (QC ID=36511)	R010183-07			0.21	1.09			94		100			22	11/17/00	11/17	GRB-223
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	
	SRTOT_SEP_PRECIP_GPC	
	CP-502	Strontium in Solids, rev 2
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.21 ± 0.055
YIELD 90 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

Test TC Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1107

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6962-027						
B10ML2	R010183-01			7539-001	U	
B10ML3	R010183-02			7539-002	U	
B10ML4	R010183-03			7539-003	1.75	J
B10ML5	R010183-04			7539-004	U	
BLK (QC ID=36510)	R010183-06			7539-006	U	
LCS (QC ID=36509)	R010183-05			7539-005	ok	
Duplicate (R010183-02)	R010183-07			7539-007	-	U

Nominal values and limits from method RDLs (pCi/g) 15
100-KR-4 Pump & Treat - Resin Smpl.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 6962-027	2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 027															
B10ML2	R010183-01			1.4	1.04			35		50			54	11/30/00	12/19	GRB-220
B10ML3	R010183-02			1.4	1.04			33		50			51	11/30/00	12/16	GRB-203
B10ML4	R010183-03			1.5	1.03			35		50			51	11/30/00	12/16	GRB-204
B10ML5	R010183-04			1.1	1.03			44		50			55	11/30/00	12/20	GRB-217
BLK (QC ID=36510)	R010183-06			0.55	1.00			93		50				11/30/00	12/20	GRB-218
LCS (QC ID=36509)	R010183-05			0.98	1.00			53		50				11/30/00	12/19	GRB-219
Duplicate (R010183-02) (QC ID=36511)	R010183-07			1.6	1.04			32		50			54	11/30/00	12/19	GRB-202
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

Test	TC
Matrix	SOLID
SDG	7539
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1107

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	1.2	±	0.73
FOR 7 SAMPLES	YIELD	46	±	44

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1107

Test H Matrix SOLID
SDG 7539
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1107

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6962-027						
B10ML2	R010183-01		A1	7539-001	14.4	J
B10ML3	R010183-02		A1	7539-002	25.6	J
B10ML4	R010183-03		A1	7539-003	12.7	J
B10ML5	R010183-04		A1	7539-004	11.7	J
BLK (QC ID=36737)	R010183-09			7539-009	U	
LCS (QC ID=36736)	R010183-08			7539-008	ok	
Duplicate (R010183-02)	R010183-10			7539-010	ok	J

Nominal values and limits from method RDLs (pCi/g) 400
100-KR-4 Pump & Treat - Resin Smpl.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	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 6962-027	2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 027															
B10ML2	R010183-01		A1	6.2	0.214			100		100			41	12/06/00	12/06	LSC-005
B10ML3	R010183-02		A1	6.1	0.214			100		100			41	12/06/00	12/06	LSC-005
B10ML4	R010183-03		A1	6.1	0.211			100		100			41	12/06/00	12/06	LSC-005
B10ML5	R010183-04		A1	6.5	0.202			100		100			41	12/06/00	12/06	LSC-005
BLK (QC ID=36737)	R010183-09			6.5	0.200			100		100				12/06/00	12/06	LSC-005
LCS (QC ID=36736)	R010183-08			6.2	0.200			100		100				12/06/00	12/07	LSC-005
Duplicate (R010183-02) (QC ID=36738)	R010183-10			6.1	0.211			100		100			41	12/06/00	12/06	LSC-005
Nominal values and limits from method				400	0.200					25			180			

PROCEDURES	REFERENCE	TRITIUM_COX_LSC
	CP-060	Soil Preparation, rev 2
	CP-251	Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD MDA 6.2 ± 0.36
FOR 7 SAMPLES YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/27/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-60	Page 1 of 1
Collector: Johansen	Company Contact: T Pickett; Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4 H1107 (7539)	SAF No.: B99-029	Air Quality ☐
Ice Chest No.: ERC99-031 (1 of 1)	Field Logbook No.: EL-1516; COA: R10KR4C570	Method of Shipment: Federal Express	
Shipped To: TMA/~~RECRA~~ TMD 10-26-00	Offsite Property No.: A010019	Bill of Lading/Air Bill No.: 4235 7953-0051	

POSSIBLE SAMPLE HAZARDS/REMARKS

HISTORICAL DATA INCICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED

Special Handling and/or Storage

NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium-89,90 – Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	VOC Anions - 300.0 (Bromate)	See item (2) in Special Instructions.		

Sample No.	Matrix *	Sample Date	Sample Time										
B10ML2	OTHER SOLID	10-26-00	1242	X	X	X	X						97750
B10ML3	OTHER SOLID	10-26-00	1250	X	X	X	X						97751
B10ML4	OTHER SOLID	10-26-00	1308	X	X	X	X						97752
B10ML5	OTHER SOLID	10-26-00	1323	X	X	X	X						97753

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Thomas Dominguez	10-26-00 1545	Received By TMD 10-26-00	1545
Relinquished By	Remove Drum Ref #2B 3728	10/30/00 0700	Received By R T Thoren	10/30/00 0700
Relinquished By	R T Thoren	10/30/00 0700	Received By FEDEX	10/31/00
Relinquished By	FED-Express	10/31/00 10:Am	Received By E. Degnan	10/31/00 10:Am
Relinquished By		Date/Time	Received By	Date/Time
Relinquished By		Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

~~(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichlorotrifluoromethane)~~

~~(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add on - 1311/6010 (Antimony, Beryllium, Nickel).~~

RT 10/30/00

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/26/00.
Collector not available to relinquish samples on 10/30/00 for shipment..

RT 10/30/00

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

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

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD Date/Time received 10/31/12 10:AM

CoC No. B99-029-60

Container I.D. No. ERC 99-031 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: 4x4 = 16
7. Number of containers per sample: (4 EACH) (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 E. Segura Date: 10/31/12 Time: 10:Am

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10ML2						
% SOLIDS	001	SO	00L%S174	10/26/00	11/03/00	11/06/00
% SOLIDS	001 REP	SO	00L%S174	10/26/00	11/03/00	11/06/00
NITRATE BY IC	001	SO	00LXC076	10/26/00	11/29/00	11/29/00
NITRATE BY IC	001 REP	SO	00LXC076	10/26/00	11/29/00	11/29/00
NITRATE BY IC	001 MS	SO	00LXC076	10/26/00	11/29/00	11/29/00
TCLP	001	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML3						
% SOLIDS	002	SO	00L%S174	10/26/00	11/03/00	11/06/00
NITRATE BY IC	002	SO	00LXC076	10/26/00	11/29/00	11/29/00
TCLP	002	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML4						
% SOLIDS	003	SO	00L%S174	10/26/00	11/03/00	11/06/00
NITRATE BY IC	003	SO	00LXC076	10/26/00	11/29/00	11/29/00
TCLP	003	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML5						
% SOLIDS	004	SO	00L%S174	10/26/00	11/03/00	11/06/00
NITRATE BY IC	004	SO	00LXC076	10/26/00	11/29/00	11/29/00
TCLP	004	SO	00LTO140	10/26/00	12/12/00	12/13/00

LAB QC:

NITRATE BY IC	MB1	S	00LXC076	N/A	11/29/00	11/29/00
NITRATE BY IC	MB1 BS	S	00LXC076	N/A	11/29/00	11/29/00

JAN 2001
RECEIVED

01
08

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-029 H1107
RFW# : 0010L094

W.O. # : 10985-001-001-9999-00
Date Received: 10-31-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 solid samples.

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

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

4. The cooler temperatures were recorded on the chain-of-custody.

5. The method blank for Nitrate was within method criteria.

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

7. The matrix spike recovery for Nitrate was within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-17-00
Date

njp\i10-094

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 10 pages.

01
02

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		__ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate **Method:** EPA 300.0 (mod.)

Other: **Method**

L-WI-034/B-2/00

~~02~~
03

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

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

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

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

f. Code of Federal Regulations.

03
04

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/14/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10ML2	% Solids	47.5	%	0.01	1.0
		Nitrate by IC	5.7	MG/KG	2.6	1.0
-002	B10ML3	% Solids	47.7	%	0.01	1.0
		Nitrate by IC	5.1	MG/KG	2.6	1.0
-003	B10ML4	% Solids	44.6	%	0.01	1.0
		Nitrate by IC	9.9	MG/KG	2.8	1.0
-004	B10ML5	% Solids	44.5	%	0.01	1.0
		Nitrate by IC	10	MG/KG	2.8	1.0

05
DM
1/12/01

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/14/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC076-MB1	Nitrate by IC	1.2 u	MG/KG	1.2	1.0

06
05

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/14/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10ML2	Nitrate by IC	57	5.7	53	96.3	1.0
BLANK10	00LXC076-MB1	Nitrate by IC	25	1.2 u	25	98.5	1.0

07
06
1/12/01

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/14/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10ML2	% Solids	47.5	47.1	0.82	1.0
		Nitrate by IC	5.7	5.5	3.0	1.0

08
~~07~~
12/14/00

RECRA LabNet Use Only
0010L094

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-029
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: 10-31-00 Date Due: 11-30-00
Account #:

		A	B						C		D					
Refrigerator #		1	5						5		5					
#/Type Container	Liquid															
	Solid	1 bag	1 bag						1 bag		1 bag					
Volume	Liquid	0	0						0		0					
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	IC Anions					
		RECRA LabNet Use Only														
		OC24X	OC25X						ITCLP		ICNO3		MH①			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OC24X	OC25X	ITCLP	ICNO3	MH①
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B10ML2			SO	10/31/00	1242	X	X	X	X	
	002	B10ML3					1250	X	X	X	X	
	003	B10ML4					1308	X	X	X	X	
	004	B10ML5					1323	X	X	X	X	
	005	B10ML2 tap of 001			L	*	-					✓
	006	3 002					-					✓
	007	4 003					-					✓
	008	5 004					-					✓

Special Instructions: SAS B99-029

Run Matrix QC

DATE/REVISIONS:

MH① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni
* 2. See labchron
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	[illegible]	10/31/00	09:15

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL RELINQUISHED		

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. 4.3 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: # 4235 7954 0073
4235 7954 0062

36°C

Bechtel Hanford I	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-60	Page 1 of 1

Collector: Johansen	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100-KR-4 Pump & Treat - F sin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC-96-019 (10R)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A010006	Bill of Lading/Air Bill No.: 4235 7953 00062	

MTD 10-26-00

POSSIBLE SAMPLE HAZARDS/REMARKS

HISTORICAL DATA INCICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED

Special Handling and/or Storage

NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG		
No. of Container(s)	1		1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium-89,90 – Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) {Bis(2-ethylhexyl) phthalate}	See item (1) in Special Instructions.	IC Anions - 300.0 {Nitrate}	See item (2) in Special Instructions.		

MTD 10-26-00

Sample No.	Matrix *	Sample Date	Sample Time										
B10ML2	OTHER SOLID	10-26-00	1242					X	X	X	X		97750
B10ML3	OTHER SOLID	10-26-00	1260					X	X	X	X		97751
B10ML4	OTHER SOLID	10-26-00	1308					X	X	X	X		97752
B10ML5	OTHER SOLID	10-26-00	1323					X	X	X	X		97753

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10-26-00 1545	MTD 10-26-00 / Stored in Ref #2B	10-26-00 1545
Removed from Ref #2B 3728	10/30/00 0900	R Thoren	10/30/00 0900
R. Thoren	10/30/00 0900	FEDEX	
Fed Ex	10-31-00/0915	[signature]	10.31.00/0915

RT 10/30

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichloromonofluoromethane}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel}

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/26/00. Collector not available to relinquish samples on 10/30/00 for shipment. RT 10/30/00

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

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

BHI-EE-011 (10/99)

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10ML2						
TCLP	001	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML3						
TCLP	002	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML4						
TCLP	003	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML5						
TCLP	004	SO	00LTO140	10/26/00	12/12/00	12/13/00
B10ML2						
SILVER, TCLP LEACHAT	005	W	99L1808	12/13/00	12/13/00	12/14/00
SILVER, TCLP LEACHAT	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
SILVER, TCLP LEACHAT	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
ARSENIC, TCLP LEACHA	005	W	99L1808	12/13/00	12/13/00	12/15/00
ARSENIC, TCLP LEACHA	005 REP	W	99L1808	12/13/00	12/13/00	12/15/00
ARSENIC, TCLP LEACHA	005 MS	W	99L1808	12/13/00	12/13/00	12/15/00
BARIUM, TCLP LEACHAT	005	W	99L1808	12/13/00	12/13/00	12/14/00
BARIUM, TCLP LEACHAT	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
BARIUM, TCLP LEACHAT	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	005	W	99L1808	12/13/00	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	005	W	99L1808	12/13/00	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	005	W	99L1808	12/13/00	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	005	W	99L1808	12/13/00	12/13/00	12/14/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
LEAD, TCLP LEACHATE	005	W	99L1808	12/13/00	12/13/00	12/14/00
LEAD, TCLP LEACHATE	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
LEAD, TCLP LEACHATE	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	005	W	99L1808	12/13/00	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
SELENIUM, TCLP LEACH	005	W	99L1808	12/13/00	12/13/00	12/14/00
SELENIUM, TCLP LEACH	005 REP	W	99L1808	12/13/00	12/13/00	12/14/00
SELENIUM, TCLP LEACH	005 MS	W	99L1808	12/13/00	12/13/00	12/14/00
B10ML3						
SILVER, TCLP LEACHAT	006	W	99L1808	12/13/00	12/13/00	12/14/00
ARSENIC, TCLP LEACHA	006	W	99L1808	12/13/00	12/13/00	12/15/00
BARIUM, TCLP LEACHAT	006	W	99L1808	12/13/00	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	006	W	99L1808	12/13/00	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	006	W	99L1808	12/13/00	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	006	W	99L1808	12/13/00	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	006	W	99L1808	12/13/00	12/13/00	12/14/00
LEAD, TCLP LEACHATE	006	W	99L1808	12/13/00	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	006	W	99L1808	12/13/00	12/13/00	12/14/00
SELENIUM, TCLP LEACH	006	W	99L1808	12/13/00	12/13/00	12/14/00
B10ML4						
SILVER, TCLP LEACHAT	007	W	99L1808	12/13/00	12/13/00	12/14/00
ARSENIC, TCLP LEACHA	007	W	99L1808	12/13/00	12/13/00	12/15/00
BARIUM, TCLP LEACHAT	007	W	99L1808	12/13/00	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	007	W	99L1808	12/13/00	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	007	W	99L1808	12/13/00	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	007	W	99L1808	12/13/00	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	007	W	99L1808	12/13/00	12/13/00	12/14/00
LEAD, TCLP LEACHATE	007	W	99L1808	12/13/00	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	007	W	99L1808	12/13/00	12/13/00	12/14/00
SELENIUM, TCLP LEACH	007	W	99L1808	12/13/00	12/13/00	12/14/00
B10ML5						
SILVER, TCLP LEACHAT	008	W	99L1808	12/13/00	12/13/00	12/14/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	008	W	99L1808	12/13/00	12/13/00	12/15/00
BARIUM, TCLP LEACHAT	008	W	99L1808	12/13/00	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	008	W	99L1808	12/13/00	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	008	W	99L1808	12/13/00	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	008	W	99L1808	12/13/00	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	008	W	99L1808	12/13/00	12/13/00	12/14/00
LEAD, TCLP LEACHATE	008	W	99L1808	12/13/00	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	008	W	99L1808	12/13/00	12/13/00	12/14/00
SELENIUM, TCLP LEACH	008	W	99L1808	12/13/00	12/13/00	12/14/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
SILVER, TCLP LEACHAT	MB1	W	99L1808	N/A	12/13/00	12/14/00
SILVER, TCLP LEACHAT	MB2	W	99L1808	N/A	12/13/00	12/14/00
ARSENIC LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/15/00
ARSENIC, TCLP LEACHA	MB1	W	99L1808	N/A	12/13/00	12/15/00
ARSENIC, TCLP LEACHA	MB2	W	99L1808	N/A	12/13/00	12/15/00
BARIUM LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
BARIUM, TCLP LEACHAT	MB1	W	99L1808	N/A	12/13/00	12/14/00
BARIUM, TCLP LEACHAT	MB2	W	99L1808	N/A	12/13/00	12/14/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1808	N/A	12/13/00	12/14/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1808	N/A	12/13/00	12/14/00
CADMIUM LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	MB1	W	99L1808	N/A	12/13/00	12/14/00
CADMIUM, TCLP LEACHA	MB2	W	99L1808	N/A	12/13/00	12/14/00
CHROMIUM LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	MB1	W	99L1808	N/A	12/13/00	12/14/00
CHROMIUM, TCLP LEACH	MB2	W	99L1808	N/A	12/13/00	12/14/00
NICKEL LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	MB1	W	99L1808	N/A	12/13/00	12/14/00
NICKEL, TCLP LEACHAT	MB2	W	99L1808	N/A	12/13/00	12/14/00
LEAD LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
LEAD, TCLP LEACHATE	MB1	W	99L1808	N/A	12/13/00	12/14/00
LEAD, TCLP LEACHATE	MB2	W	99L1808	N/A	12/13/00	12/14/00
ANTIMONY LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
ANTIMONY, TCLP LEACH	MB1	W	99L1808	N/A	12/13/00	12/14/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TCLP LEACH	MB2	W	99L1808	N/A	12/13/00	12/14/00
SELENIUM LABORATORY	LC1 BS	W	99L1808	N/A	12/13/00	12/14/00
SELENIUM, TCLP LEACH	MB1	W	99L1808	N/A	12/13/00	12/14/00
SELENIUM, TCLP LEACH	MB2	W	99L1808	N/A	12/13/00	12/14/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW#: 0010L094
SDG/SAF#: H1107/B99-029

W.O.#: 10985-001-001-9999-00
Date Received: 10-31-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 TCLP leachate 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. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL) with the exception of Arsenic in file PS1214C. All samples were rerun for Arsenic in file PS1215A.

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, 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 80-120% control limits. Refer to form 7.

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

11. The TCLP extract from sample B10ML2 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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 16 pages.

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

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

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-19-00
Date

gmb/m10-094

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: 0001 12/19/00 0010-094

Leaching Procedure: ✓ __1310 ✓ 1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓ 3010A __3015 __3020A __3050B __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-11/99

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 12/19/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B10ML2	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	40.7		UG/L	33.9	1.0
		Barium, TCLP Leachate	6.3		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	3620		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0
-006	B10ML3	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u	UG/L	33.9	1.0
		Barium, TCLP Leachate	25.3		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	3480		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B10ML4	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	34.4		UG/L	33.9	1.0
		Barium, TCLP Leachate	28.1		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	1890		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0
-008	B10ML5	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	44.5		UG/L	33.9	1.0
		Barium, TCLP Leachate	29.4		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	1920		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/19/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1808-MB1	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u	UG/L	33.9	1.0
		Barium, TCLP Leachate	3.0	u	UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0
BLANK2	99L1808-MB2	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u	UG/L	33.9	1.0
		Barium, TCLP Leachate	3.0	u	UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-005	B10ML2	Silver, TCLP Leachate	3930	2.5 u	5000	78.7	1.0
		Arsenic, TCLP Leachate	4980	40.7	5000	98.8	1.0
		Barium, TCLP Leachate	94500	6.3	100000	94.5	1.0
		Beryllium, TCLP Leacha	874	0.60u	1000	87.4	1.0
		Cadmium, TCLP Leachate	934	3.4 u	1000	93.4	1.0
		Chromium, TCLP Leachat	8140	3620	5000	90.5	1.0
		Nickel, TCLP Leachate	907	12.5 u	1000	90.7	1.0
		Lead, TCLP Leachate	4720	25.0 u	5000	94.4	1.0
		Antimony, TCLP Leachat	628	17.0 u	1000	62.8	1.0
		Selenium, TCLP Leachat	941	62.3 u	1000	94.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-005REP	B10ML2	Silver, TCLP Leachate	2.5 u	2.5 u	NC	1.0
		Arsenic, TCLP Leachate	40.7	33.9 u	~~NC~~ 200	1.0
		Barium, TCLP Leachate	6.3	6.8	7.6	1.0
		Beryllium TCLP Leachate	0.60u	0.60u	NC	1.0
		Cadmium, TCLP Leachate	3.4 u	3.4 u	NC	1.0
		Chromium, TCLP Leachate	3620	3560	1.7	1.0
		Nickel, Leachate	12.5 u	12.5 u	NC	1.0
		Lead, TCLP Leachate	25.0 u	25.0 u	NC	1.0
		Antimony, Leachate	17.0 u	17.0 u	NC	1.0
		Selenium, TCLP Leachate	62.3 u	62.3 u	NC	1.0

MJS 12/19/00

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1107 RECRA LOT #: 0010L094

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1808-LC1	Silver, LCS	499	500	UG/L	99.8
		Arsenic, LCS	9890	10000	UG/L	98.9
		Barium, LCS	4860	5000	UG/L	97.3
		Beryllium, LCS	243	250	UG/L	97.2
		Cadmium, LCS	248	250	UG/L	99.2
		Chromium, LCS	489	500	UG/L	97.8
		Nickel, LCS	1950	2000	UG/L	97.3
		Lead, LCS	2420	2500	UG/L	96.8
		Antimony, LCS	2920	3000	UG/L	97.4
		Selenium, LCS	9100	10000	UG/L	91.0

RECRA LabNet Use Only
0010L094

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-029
Est. Final Proj. Sampling Date:
Project #: 10285-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-31-00 Date Due: 11-30-00
Account #:

		A	B	C	D
Refrigerator #		1	5	5	5
#/Type Container	Liquid				
	Solid	1 jar	1 jar	1 jar	1 jar
Volume	Liquid	0	0	0	0
	Solid	250	250	500	250
Preservatives		—	—	—	—
ANALYSES REQUESTED	ORGANIC: VOA			INORG: ICP Metal	
	ORGANIC: BNA			INORG: CN	
	ORGANIC: Pest/PCB			INORG: IC Anions	
	ORGANIC: Herb				
RECRA LabNet Use Only		OLC24X	OLC25X	ITCLP	ICNO3

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	OLC24X	OLC25X	ITCLP	ICNO3	Mrt ①
001	B10ML2			SO	10/26/00	1242	X	X	X	X	
002	B10ML3					1850	X	X	X	X	
003	B10ML4					1308	X	X	X	X	
004	B10ML5					1323	X	X	X	X	
005	B10ML2 tap of 001			L	*	–					✓
006	3 002					–					✓
007	4 003					–					✓
008	5 004					–					✓

Special Instructions: Saf B99-029

Run Matrix QC

DATE/REVISIONS:
Mrt ① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni
* 2. See lab chron
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. 4.3 °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	10/31/00	0915

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: # 4235 7954 0073
4235 7954 0062

316°C

Bechtel Hanford I	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-60	Page 1 of 1

Collector: Johansen	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100-KR-4 Pump & Treat - F sin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	Air Quality ☐
Ice Chest No.: ERC-96-019-(10F2)	Field Logbook No.: EL-1516 — COA: R10KR4C570	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A010006	Bill of Lading/Air Bill No.: 42357453 00062	

TMD 10-26-00

POSSIBLE SAMPLE HAZARDS/REMARKS

HISTORICAL DATA INCICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED

Special Handling and/or Storage

NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium-89,90 -- Total Sr	Gamma Spectroscopy	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		

TMD 10-26-00 Duplicate

Sample No.	Matrix *	Sample Date	Sample Time										
B10ML2	OTHER SOLID	10-26-00	1242					X	X	X	X		97750
B10ML3	OTHER SOLID	10-26-00	1260					X	X	X	X		97751
B10ML4	OTHER SOLID	10-26-00	1308					X	X	X	X		97752
B10ML5	OTHER SOLID	10-26-00	1323					X	X	X	X		97753

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10-26-00 1545	TMD 10-26-00 / Stored in Ref #2B	10-26-00 1545
Removed from Ref #2B 3728	10/30/00 0900	R Thoren	10/30/00 0900
R. Thoren	10/30/00 0900	FEDEX	
Fed Ex	10-31-00/0815	[signature]	10.31.00/0915

RT 10/30/00

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/26/00. Collector not available to relinquish samples on 10/30/00 for shipment.

RT 10/30/00

Matrix *

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

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

BHI-EE-011 (10/99)

96

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10ML2	001	SO	00LE1392	10/26/00	11/01/00	11/24/00
B10ML2	001 R1	SO	00LE1587	10/26/00	12/05/00	12/14/00
B10ML2	001 MS	SO	00LE1392	10/26/00	11/01/00	11/24/00
B10ML2	001 MSD	SO	00LE1392	10/26/00	11/01/00	11/24/00
B10ML3	002	SO	00LE1392	10/26/00	11/01/00	11/28/00
B10ML3	002 R1	SO	00LE1587	10/26/00	12/05/00	12/14/00
B10ML4	003	SO	00LE1392	10/26/00	11/01/00	11/24/00
B10ML4	003 R1	SO	00LE1587	10/26/00	12/05/00	12/14/00
B10ML4	003 MS R1	SO	00LE1587	10/26/00	12/05/00	12/14/00
B10ML4	003 MSD R1	SO	00LE1587	10/26/00	12/05/00	12/14/00
B10ML5	004	SO	00LE1392	10/26/00	11/01/00	11/24/00
B10ML5	004 R1	SO	00LE1587	10/26/00	12/05/00	12/14/00

LAB QC:

SBLKFG	MB1	S	00LE1392	N/A	11/01/00	11/23/00
SBLKFG	MB1 BS	S	00LE1392	N/A	11/01/00	11/23/00
SBLKJP	MB1	S	00LE1587	N/A	12/05/00	12/13/00
SBLKJP	MB1 BS	S	00LE1587	N/A	12/05/00	12/13/00

JAN 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW #: 0010L094
SDG/SAF #: H1107/B99-029

W.O. #: 10985-001-001-9999-00
Date Received: 10-31-2000

SEMIVOLATILE

Four (4) solid samples were collected on 10-26-2000.

The samples and their associated QC samples were extracted on 11-01-2000, 12-05-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for client specified Semivolatile target compound Bis(2-Ethylhexyl)phthalate on 11-23,24-2000 and 12-13,14-2000.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. The samples were extracted and analyzed within required holding times with the exception of re-extraction of these samples, which were performed outside of extraction holding time.
3. Sample B10ML3 required a 5-fold dilution due to high levels of target compounds.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-four (24) base neutral matrix spike recoveries was outside EPA QC limits.

   All base neutral blank spike recoveries were within acceptance criteria.

   The target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)
6. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at levels less than 3x the CRQL. All associated analyses of method blank (00LE1587-MB1) yielded Bis (2-Ethylhexyl) phthalate at levels less than the CRQL.
7. Internal standard area and retention time criteria were met.
8. The re-extracted analyses were spiked with 75ug of base neutral surrogates instead of the method specified 50ug. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
9. Both samples were re-extracted to confirm the level of Bis (2-Ethylhexyl) phthalate in the samples. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

by J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-4-01
Date

som\group\data\bna\tnu-hanford-10-094.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 1 3 pages.

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

Record LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 00EX176

Initiator: Bernard Foley Batch: 0010194 Parameter: BNA
Date: 12/6/00 Samples: 1-4 Matrix: S
Client: TNV Method: SW846/MCAWW/CLP/ Prep Batch: 00E1587

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

Surrogate Concentrations Switched

2. Known or Probable Causes(s)

analyst error

3. Discussion and Proposed Action Other Description: Reference SDR # 00EX176

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

4. Project Manager Instructions...signature/date: [signature] 12/7/00

__ 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: GT 1/3/01 Other Explanation:

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

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 General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson	__	__ GC/LC: Pastor
__	X Technical Mgr: Wesson/Daniels	2	X MS: Rycklak/Layman
__	X QA (file): Popp	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kiger	__	__ Other: _____

L-WI-006/E-11/00

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00MS551

Initiator: John J. Smith Batch: 00 10 L 094 Parameter: BNA 8270X
Date: 11/29/00 Samples: MB/MSD + BS Matrix: Soil
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 00 L 1392
B99-029

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)
1) Four acid spikes fail in MS/MSD 2) PCP fails low in BS 3) Bis (2-ethylhexyl) phthalate exceeds calibration range in MSD. Only a "J" value in MB1.

2. Known or Probable Causes(s) (To be used for trend analysis)

___ Lack of Organization
___ Lack of Training
___ Lack of Discipline
___ Lack of Resources
___ Lack of Time
___ Lack of Management Support
___ Other (Please explain):

3. Discussion and Proposed Action Other Description: Report + Narrate

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

4. Project Manager Instructions...signature/date: 12/1/00

__ 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: 12/7/00 Other Explanation: Batch - 1587 - 12/5/00

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative 1/3/01
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

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

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
__ Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

Pl log-in 12/14/00

L-WI-006/E-08/00

4

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Special List

Report Date: 01/03/01 15:51

RFW Batch Number: **0010L094** Client: **TNUHANFORD B99-029 H1107** Work Order: 10985001001 Page: 1a

	Cust ID:	B10ML2		B10ML2		B10ML2		B10ML2		B10ML3		B10ML3	
Sample Information	RFW#:	001		001		001 MS		001 MSD		002		002	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	1.00		1.00		1.00		1.00		5.00		1.00	
	Units:	ug/Kg		ug/Kg REPREP		ug/Kg		ug/Kg		ug/Kg		ug/Kg REPREP	
Surrogate Recovery	Nitrobenzene-d5	38	%	62	%	80	%	73	%	73	%	65	%
	2-Fluorobiphenyl	59	%	55	%	83	%	76	%	68	%	60	%
	p-Terphenyl-d14	80	%	88	%	91	%	88	%	83	%	103	%
bis(2-Ethylhexyl)phthalate		580	JB	170	JB	450	JB	8700	E	12000	B	220	JB

	Cust ID:	B10ML4		B10ML4		B10ML4		B10ML4		B10ML5		B10ML5	
Sample Information	RFW#:	003		003		003 MS		003 MSD		004		004	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg REPREP		ug/Kg REPREP		ug/Kg REPREP		ug/Kg		ug/Kg REPREP	
Surrogate Recovery	Nitrobenzene-d5	79	%	50	%	70	%	47	%	62	%	49	%
	2-Fluorobiphenyl	74	%	44	%	68	%	42	%	57	%	43	%
	p-Terphenyl-d14	105	%	70	%	107	%	72	%	74	%	76	%
bis(2-Ethylhexyl)phthalate		120	JB	90	JB	97	JB	160	JB	430	JB	36	JB

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Special List

Report Date: 01/03/01 15:51

RFW Batch Number: **0010L094** Client: **TNUHANFORD B99-029 H1107** Work Order: 10985001001 Page: 2a

	Cust ID:	**SBLKFG**		**SBLKFG BS**		**SBLKJP**		**SBLKJP BS**	
Sample Information	RFW#:	**00LE1392-MB1**		**00LE1392-MB1**		**00LE1587-MB1**		**00LE1587-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	67	%	71	%	57	%	43	%
	2-Fluorobiphenyl	72	%	78	%	63	%	43	%
	p-Terphenyl-d14	89	%	89	%	99	%	66	%
bis(2-Ethylhexyl)phthalate		95	J	100	JB	820		160	JB

*= Outside of EPA CLP QC limits.

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra LabNet Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1107 RFW Lot No.: 0010L094-001

MATRIX Spike - Sample No.: B10ML2

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC.
Phenol	5260	0	3190	61	26 - 90
2-Chlorophenol	5260	0	3280	62	25 -102
1,4-Dichlorobenzene	3510	0	2330	66	28 -104
N-Nitroso-di-n-prop.(1)	3510	0	2410	69	41 -126
1,2,4-Trichlorobenzene	3510	0	2440	69	38 -107
4-Chloro-3-methylphenol	5260	0	2740	52	26 -103
Acenaphthene	3510	0	2720	78	31 -137
4-Nitrophenol	5260	0	0	0 *	11 -114
2,4-Dinitrotoluene	3510	0	2310	66	28 - 89
Pentachlorophenol	5260	0	0	0 *	17 -109
Pyrene	3510	0	2690	77	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	5260	3130	59	3	35	26 - 90
2-Chlorophenol	5260	3260	62	0	50	25 -102
1,4-Dichlorobenzene	3510	2350	67	1	27	28 -104
N-Nitroso-di-n-prop.(1)	3510	2530	72	4	38	41 -126
1,2,4-Trichlorobenzene	3510	2330	67	2	23	38 -107
4-Chloro-3-methylphenol	5260	2880	55	5	33	26 -103
Acenaphthene	3510	2680	77	1	19	31 -137
4-Nitrophenol	5260	0	0 *	0	50	11 -114
2,4-Dinitrotoluene	3510	2300	66	0	47	28 - 89
Pentachlorophenol	5260	0	0 *	0	47	17 -109
Pyrene	3510	2780	79	2	36	35 -142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS: 0 of 12 base/neutral compounds 1/3/01

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1107 RFW Lot No.: 0010L094-003

MATRIX Spike - Sample No.: B10ML4RE Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	3660	0	1640	45	28 -104
N-Nitroso-Di-n-propylamine	3660	0	2700	74	41 -126
1,2,4-Trichlorobenzene	3660	0	1940	53	38 -107
Acenaphthene	3660	0	2580	70	31 -137
2,4-Dinitrotoluene	3660	0	2640	72	28 -89
Pyrene	3660	0	2930	80	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,4-Dichlorobenzene	3760	1170	31	36 *	27	28 -104
N-Nitroso-Di-n-propylamine	3760	1920	51	37	38	41 -126
1,2,4-Trichlorobenzene	3760	1340	36 *	38 *	23	38 -107
Acenaphthene	3760	1750	46	41 *	19	31 -137
2,4-Dinitrotoluene	3760	1610	43	50 *	47	28 -89
Pyrene	3760	2020	54	38 *	36	35 -142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 5 out of 6 outside limits
Spike Recovery: 1 out of 12 outside limits

COMMENTS:

3D

SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1107 RFW Lot No.: 0010L094

BLANK Spike - Sample No.: SBLKFGLE1392-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	BS CONCENTRATION UG/KG	BS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	1670	0	1050	63	28 -104
N-Nitroso-Di-n-propylamine	1670	0	915	55	41 -126
1,2,4-Trichlorobenzene	1670	0	1170	70	38 -107
Acenaphthene	1670	0	1180	71	31 -137
2,4-Dinitrotoluene	1670	0	1080	65	28 -89
Pyrene	1670	0	1350	81	35 -142

Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

11

3D

SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1107 RFW Lot No.: 0010L094

BLANK Spike - Sample No.: SBLKJPLE1587-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	BS CONCENTRATION UG/KG	BS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	0	0	0		28 -104
N-Nitroso-Di-n-propylamine	0	0	0		41 -126
1,2,4-Trichlorobenzene	0	0	0		38 -107
Acenaphthene	0	0	0		31 -137
2,4-Dinitrotoluene	0	0	0		28 -89
Pyrene	0	0	0		35 -142

Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

RECRA LabNet Use Only: 0010L094

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU-Hanford B99-029
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999.00
Project Contact/Phone #:
RECRA Project Manager: QJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10.31.00 Date Due: 11.30.00
Account #:

		A	B	C	D
Refrigerator #		1	5	5	5
#/Type Container	Liquid				
	Solid	1 jar	1 jar	1 jar	1 jar
Volume	Liquid	0	0	0	0
	Solid	250	250	500	250
Preservatives		—	—	—	—
ANALYSES REQUESTED		ORGANIC: VOA	ORGANIC: BNA	INORG: ICP Metal	INORG: IC Anions

RECRA LabNet Use Only

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	0024X	0025X	ITCLP	ICnO3	MH①
001	B10ML2			SO	10/31/00	1242	X	X	X	X	
002	B10ML3					1250	X	X	X	X	
003	B10ML4					1308	X	X	X	X	
004	B10ML5					1323	X	X	X	X	
005	B10ML2 trip of 001			L	*	—					✓
006	3 002					—					✓
007	4 003					—					✓
008	5 004					—					✓

Special Instructions: SAF B99-029

Run Matrix QC

DATE/REVISIONS:
Mt① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni
* 2. See labchron
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. 4.3 °C
36°C

Relinquished by	Received by	Date	Time
FedEx	[signature]	10/31/00	0915

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: # 4235 7954 0073
4235 7954 0062

Bechtel Hanford I	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-60	Page 1 of 1

Collector: Johansen	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100-KR-4 Pump & Treat - F sin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC-96-019 (10R)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A010006	Bill of Lading/Air Bill No.: 42357953 00062	

TMD 10-26-00

POSSIBLE SAMPLE HAZARDS/REMARKS

HISTORICAL DATA INCICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED

Special Handling and/or Storage
NONE

SAMPLE ANALYSIS	Isotopic Uranium	Strontium-89,90 -- Total Sr	Gamma Spectroscopy	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		

TMD 10-26-00 Delete

Sample No.	Matrix *	Sample Date	Sample Time										
B10ML2	OTHER SOLID	10-26-00	1242					X	X	X	X		97750
B10ML3	OTHER SOLID	10-26-00	1260					X	X	X	X		97751
B10ML4	OTHER SOLID	10-26-00	1308					X	X	X	X		97752
B10ML5	OTHER SOLID	10-26-00	1323					X	X	X	X		97753

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Johansen	10-26-00 1545	TMD 10-26-00 Stored in Ref #2B	10-26-00 1545
Removed from Ref #2B 3728	10/30/00 0900	R Thoren	10/30/00 0900
R. Thoren	10/30/00 0900	FEDEX	
Fed Ex	10.31.00/0915		10.31.00/0915

RT #10

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichloromonofluoromethane}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel}

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/26/00. Collector not available to relinquish samples on 10/30/00 for shipment.

RT 10/30/00

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

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

BHI-EE-011 (10/99)

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1107

DATE RECEIVED: 10/31/00 RFW LOT # :0010L094

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10ML2	001	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML2	001 MS	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML2	001 MSD	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML3	002	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML3	002 R1	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML4	003	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML4	003 R1	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML5	004	SO	00LVX347	10/26/00	N/A	11/03/00
B10ML5	004 R1	SO	00LVX347	10/26/00	N/A	11/03/00

LAB QC:

VBLKYG	MB1	S	00LVX347	N/A	N/A	11/03/00
VBLKYG	MB1 BS	S	00LVX347	N/A	N/A	11/03/00

JAN 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW #: 0010L094
SDG/SAF #: H1107/B99-029

W.O. #: 10985-001-001-9999-00
Date Received: 10-31-2000

GC/MS VOLATILE

Four (4) solid samples were collected on 10-26-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 11-03-2000.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.

2. Samples were analyzed within required holding time.

3. Two (2) of thirty-three (33) surrogate recoveries were outside EPA QC limits. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B10ML2 MSD. The initial analysis fulfills the reanalysis requirement of sample B10ML3 RE.

4. Two (2) of ten (10) matrix spike recoveries were outside EPA QC limits.

   All blank spike recoveries were within EPA QC limits.

   The target compounds are not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL.

6. Internal standard area criteria were not met for these samples. The analysis of associated matrix spike samples fulfills the reanalysis requirement for B10ML2. All other samples were reanalyzed on 11-03-2000 and reported.

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

By J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-03-01
Date

som\group\data\voa\tnu-hanford-10-094.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 9 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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GLOSSARY OF VOA DATA

ABBREVIATIONS

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

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Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 12/12/00 08:28

RFW Batch Number: **0010L094** Client: **TNUHANFORD B99-029 H1107** Work Order: 10985001001 Page: 1a

	Cust ID:	B10ML2	B10ML2	B10ML2	B10ML3	B10ML3	B10ML4
Sample Information	RFW#:	001	001 MS	001 MSD	002	002	003
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.04	1.00	1.04	1.02	1.02	1.06
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG REPREP	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	84 %	83 %	93 %	100 %	92 %	88 %
	Toluene-d8	137 %	140 %	141 * %	140 %	142 * %	128 %
	Bromofluorobenzene	77 %	74 %	77 %	82 %	74 %	74 %
Trichlorofluoromethane		6 J	6 J	7 J	5 J	4 J	5 J
Methylene Chloride		89 B	110 B	130 B	51 B	58 B	57 B
Chloroform		5 J	9 J	10 J	7 J	12	6 J

	Cust ID:	B10ML4	B10ML5	B10ML5	VBLKYG	VBLKYG BS
Sample Information	RFW#:	003	004	004	00LVX347-MB1	00LVX347-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.02	1.06	1.00	1.00	1.00
	Units:	UG/KG REPREP	UG/KG	UG/KG REPREP	UG/KG	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	94 %	91 %	97 %	88 %	92 %
	Toluene-d8	136 %	132 %	140 %	94 %	92 %
	Bromofluorobenzene	73 %	84 %	78 %	88 %	89 %
Trichlorofluoromethane		4 J	5 J	5 J	5 U	5 U
Methylene Chloride		62 B	61 B	65 B	9	10 B
Chloroform		8 J	6 J	8 J	5 U	5 U

*= Outside of EPA CLP QC limits.

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L094

Matrix Spike - EPA Sample No.: B10ML2 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	105.22	0.0000	116.35	110	61-145
Trichloroethene	105.22	0.0000	99.400	94	71-120
Benzene	105.22	0.0000	94.606	90	76-127
Toluene	105.22	7.186	158.62	144*	76-125
Chlorobenzene	105.22	0.0000	99.347	94	75-130

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	109.60	121.80	111	1	14	61-145
Trichloroethene	109.60	109.53	100	6	14	71-120
Benzene	109.60	106.99	98	8	11	76-127
Toluene	109.60	170.87	149*	3	13	76-125
Chlorobenzene	109.60	108.20	99	5	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 2 out of 10 outside limits

COMMENTS:

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 10L094

Matrix Spike - EPA Sample No.: VBLKYG Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50.000	0.0000	41.663	83	61-145
Trichloroethene	50.000	0.0000	45.658	91	71-120
Benzene	50.000	0.0000	46.058	92	76-127
Toluene	50.000	0.0000	45.445	91	76-125
Chlorobenzene	50.000	0.0000	44.469	89	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

RECRA LabNet Use Only
0010L094

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-029
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10.31.00 Date Due: 11.30.00
Account #:

		A	B						C		D					
Refrigerator #		1	5						5		5					
#/Type Container	Liquid															
	Solid	bag	bag						bag		bag					
Volume	Liquid	0	0						0		0					
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	IC Anions					
		RECRA LabNet Use Only														
		OLC24X	OLC25X						ITCLP		ICNO3		MH1			

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	OLC24X	OLC25X					ITCLP		ICNO3		MH1			
001	B10ML2			SO	10/26/00	1242	X	X					X		X					
002	B10ML3					1250	X	X					X		X					
003	B10ML4					1308	X	X					X		X					
004	B10ML5					1323	X	X					X		X					
005	B10ML2 tclp of 001			L	*	-											✓			
006	3 002					-											✓			
007	4 003					-											✓			
008	5 004					-											✓			

Special Instructions: Sas B99-029

Run Matrix QC

DATE/REVISIONS:
Mt 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni
* 2. See labchron
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. 4.3 °C 36°C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: #4235 7954 0073
4235 7954 0062

Relinquished by	Received by	Date	Time
FedEx	[illegible]	10/31/00	0915

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford I	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-60	Page 1 of 1

Collector: Johansen	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100-KR-4 Pump & Treat - F sin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	Air Quality ☐
Ice Chest No.: ERC-96-019 (10F2)	Field Logbook No.: EL-1516 — COA: R10KR4C570	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A010006	Bill of Lading/Air Bill No.: 42357953 00062	

TMD 10-26-00

POSSIBLE SAMPLE HAZARDS/REMARKS

HISTORICAL DATA INCICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED

Special Handling and/or Storage
NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium-89,90 -- Total Sr	Gamma Spectrum	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time							
B10ML2	OTHER SOLID	10-26-00	1242				X	X	X	X		97750
B10ML3	OTHER SOLID	10-26-00	1260				X	X	X	X		97751
B10ML4	OTHER SOLID	10-26-00	1308				X	X	X	X		97752
B10ML5	OTHER SOLID	10-26-00	1323				X	X	X	X		97753

Due 12-26-00

CHAIN OF POSSESSION — *Sign/Print Names*

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10-26-00 1545	TMD 10-26-00 Stored in Ref #2B	10-26-00 1545
Removed from Ref #2B 3728	10/30/00 0900	R Thoren	10/30/00 0900
R. Thoren	10/30/00 0900	FED EX	
Fed Ex	10.31.00/0915	[signature]	10.31.00/0915

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/26/00. Collector not available to relinquish samples on 10/30/00 for shipment.

RJ 10/30/00

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

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

BHI-EE-011 (10/99)