Eberline Services
W.O. No. R0-12-043-7590

Bechtel Hanford Inc.
SDG H1175

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1175 was composed of six other solid samples designated under SAF No. B99-028 with a Project Designation of: 100-HR-3 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

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

Sample B11253 had a 13% yield. A Rerun/Reanalysis waiver was received from BHI on January 5, 2000 for the sample. No other problems were encountered during the course of the analyses.

2.4 Tritium Analyses

No problems were encountered during the course of the analyses.

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

1/19/01
Date

RECEIVED
APR 0 2 2001
EDMC

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

SAMPLE SUMMARY

SDG 7590
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1175

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B11250	100-HR-3	SOLID		R012043-01	B99-028	B99-028-58	12/05/00 08:00
B11251	100-HR-3	SOLID		R012043-02	B99-028	B99-028-58	12/05/00 08:16
B11252	100-HR-3	SOLID		R012043-03	B99-028	B99-028-58	12/05/00 08:32
B11253	100-HR-3	SOLID		R012043-04	B99-028	B99-028-58	12/05/00 08:44
B11254	100-HR-3	SOLID		R012043-05	B99-028	B99-028-58	12/05/00 08:58
B11255	100-HR-3	SOLID		R012043-06	B99-028	B99-028-58	12/05/00 09:08
Method Blank		SOLID		R012043-08	B99-028		
Lab Control Sample		SOLID		R012043-07	B99-028		
Duplicate (R012043-05)	100-HR-3	SOLID		R012043-09	B99-028		12/05/00 08:58

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

QC SUMMARY

SDG 7590
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1175

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
7590	B99-028-58	B11250	SOLID	100.0			12/07/00	2	R012043-01	7590-001
		B11251	SOLID	100.0			12/07/00	2	R012043-02	7590-002
		B11252	SOLID	100.0			12/07/00	2	R012043-03	7590-003
		B11253	SOLID	100.0			12/07/00	2	R012043-04	7590-004
		B11254	SOLID	100.0			12/07/00	2	R012043-05	7590-005
		B11255	SOLID	100.0			12/07/00	2	R012043-06	7590-006
		Method Blank	SOLID						R012043-08	7590-008
		Lab Control Sample	SOLID						R012043-07	7590-007
		Duplicate (R012043-05)	SOLID	100.0			12/07/00	2	R012043-09	7590-009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/19/01

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SAMPLE DELIVERY GROUP H1175

PREP BATCH SUMMARY

SDG 7590
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1175

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
U	SOLID	Uranium, Isotopic in Soil	6962-196	5.0	6			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6962-196	10.0	6			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6962-196	10.0	6			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6962-196	10.0	6			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

WORK SUMMARY

SDG 7590
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1175

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B11250			R012043-01	7590-001	H		12/30/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-001	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
B99-028-58	B99-028		12/07/00	7590-001	TC		01/08/01	01/19/01	MCM	Technetium 99 in Soil
				7590-001	U		12/26/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11251			R012043-02	7590-002	H		12/30/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-002	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
B99-028-58	B99-028		12/07/00	7590-002	TC		01/09/01	01/19/01	MCM	Technetium 99 in Soil
				7590-002	U		12/26/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11252			R012043-03	7590-003	H		12/30/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-003	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
B99-028-58	B99-028		12/07/00	7590-003	TC		01/11/01	01/19/01	MCM	Technetium 99 in Soil
				7590-003	U		12/26/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11253			R012043-04	7590-004	H		12/30/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-004	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
B99-028-58	B99-028		12/07/00	7590-004	TC		01/09/01	01/19/01	MCM	Technetium 99 in Soil
				7590-004	U		12/26/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11254			R012043-05	7590-005	H		12/30/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-005	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
B99-028-58	B99-028		12/07/00	7590-005	TC		01/08/01	01/19/01	MCM	Technetium 99 in Soil
				7590-005	U		12/26/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11255			R012043-06	7590-006	H		12/31/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-006	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
B99-028-58	B99-028		12/07/00	7590-006	TC		01/09/01	01/19/01	MCM	Technetium 99 in Soil
				7590-006	U		12/26/00	01/19/01	MCM	Uranium, Isotopic in Soil
Method Blank			R012043-08	7590-008	H		12/30/00	01/19/01	MCM	Tritium in Soil
		SOLID		7590-008	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
	B99-028			7590-008	TC		01/08/01	01/19/01	MCM	Technetium 99 in Soil
				7590-008	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R012043-07	7590-007	H		12/31/00	01/19/01	MCM	Tritium in Soil
		SOLID		7590-007	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
	B99-028			7590-007	TC		01/08/01	01/19/01	MCM	Technetium 99 in Soil
				7590-007	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

SDG 7590
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1175

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R012043-05)			R012043-09	7590-009	H		12/31/00	01/19/01	MCM	Tritium in Soil
100-HR-3		SOLID	12/05/00	7590-009	SR		12/21/00	01/19/01	MCM	Total Strontium in Soil
	B99-028		12/07/00	7590-009	TC		01/09/01	01/19/01	MCM	Technetium 99 in Soil
				7590-009	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-028	Tritium in Soil	TRITIUM_COX_LSC	6			1	1	1	9
SR	B99-028	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	6			1	1	1	9
TC	B99-028	Technetium 99 in Soil	TC99_TR_SEP_LSC	6			1	1	1	9
U	B99-028	Uranium, Isotopic in Soil	UISO_PLATE_AEA	6			1	1	1	9
TOTALS				24			4	4	4	36

Lab id TMANC
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H1175

R012043-08 Method Blank

METHOD BLANK

SDG	7590	Client/Case no	Hanford SDG H1175
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012043-08	Client sample id	Method Blank
Dept sample id	7590-008	Material/Matrix	SOLID
		SAF No	B99-028

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.775	3.4	5.9	400	U	H
Total Strontium	SR-RAD	0.046	0.17	0.34	1.0	U	SR
Technetium 99	14133-76-7	-0.397	0.34	1.2	15	U	TC
Uranium 233	U-233/234	-0.013	0.025	0.097	1.0	U	U
Uranium 235	15117-96-1	0.015	0.031	0.12	1.0	U	U
Uranium 238	U-238	0.013	0.025	0.097	1.0	U	U

100-HR-3 Pump & Treat-Resin Sampling

QC-BLANK 37044

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7590
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1175
Case no TRC-SBB-207925

Lab sample id R012043-07
Dept sample id 7590-007

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-028

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	1430	19	5.8	400		H	1490	60	96	84-116	80-120
Total Strontium	21.7	0.56	0.15	1.0		SR	22.0	0.88	99	84-116	80-120
Technetium 99	136	2.9	0.42	15		TC	131	5.2	104	83-117	80-120
Uranium 233	9.02	0.92	0.47	1.0		U	9.29	0.37	97	82-118	80-120
Uranium 235	8.30	0.88	0.11	1.0		U	7.55	0.30	110	80-120	80-120
Uranium 238	9.61	0.97	0.45	1.0		U	10.1	0.40	95	83-117	80-120

100-HR-3 Pump & Treat-Resin Sampling

QC-LCS 37043

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-09 B11254

DUPLICATE

SDG	7590			Client/Case no	Hanford SDG H1175
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	R012043-09	Lab sample id	R012043-05	Client sample id	B11254
Dept sample id	7590-009	Dept sample id	7590-005	Location/Matrix	100-HR-3 SOLID
		Received	12/07/00	Collected	12/05/00 08:58
% solids	100.0	% solids	100.0	Custody/SAF No	B99-028-58 B99-028

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	39.8	4.5	5.6	400	J	H	38.6	4.5	5.6	J	3	32
Total Strontium	0.010	0.076	0.14	1.0	U	SR	-0.001	0.17	0.35	U	-	
Technetium 99	1230	21	1.2	15		TC	1180	11	1.2		4	21
Uranium 233	0.295	0.11	0.070	1.0	J	U	0.365	0.11	0.058	J	21	72
Uranium 235	0.011	0.022	0.085	1.0	U	U	0.009	0.018	0.070	U	-	
Uranium 238	0.267	0.093	0.070	1.0	J	U	0.327	0.11	0.058	J	20	74

100-HR-3 Pump & Treat-Resin Sampling

QC-DUP#5 37045

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/19/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-01 **B11250**

DATA SHEET

SDG	7590	Client/Case no	Hanford SDG H1175
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012043-01	Client sample id	B11250
Dept sample id	7590-001	Location/Matrix	100-HR-3 SOLID
Received	12/07/00	Collected	12/05/00 08:00
% solids	100.0	Custody/SAF No	B99-028-58 B99-028

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	5.41	3.5	5.7	400	U	H
Total Strontium	SR-RAD	-0.054	0.13	0.25	1.0	U	SR
Technetium 99	14133-76-7	0.255	0.53	1.5	15	U	TC
Uranium 233	U-233/234	9.62	0.78	0.13	1.0		U
Uranium 235	15117-96-1	0.610	0.16	0.076	1.0	J	U
Uranium 238	U-238	7.88	0.67	0.12	1.0		U

100-HR-3 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-02 B11251

DATA SHEET

SDG	7590	Client/Case no	Hanford SDG H1175
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012043-02	Client sample id	B11251
Dept sample id	7590-002	Location/Matrix	100-HR-3 SOLID
Received	12/07/00	Collected	12/05/00 08:16
% solids	100.0	Custody/SAF No	B99-028-58 B99-028

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	8.25	3.7	5.8	400	J	H
Total Strontium	SR-RAD	-0.004	0.16	0.26	1.0	U	SR
Technetium 99	14133-76-7	-0.486	0.40	1.6	15	U	TC
Uranium 233	U-233/234	0.026	0.034	0.066	1.0	U	U
Uranium 235	15117-96-1	0.010	0.021	0.080	1.0	U	U
Uranium 238	U-238	0	0.017	0.066	1.0	U	U

100-HR-3 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-03 **B11252**

DATA SHEET

SDG	7590	Client/Case no	Hanford	SDG H1175	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012043-03	Client sample id	B11252		
Dept sample id	7590-003	Location/Matrix	100-HR-3	SOLID	
Received	12/07/00	Collected	12/05/00 08:32		
% solids	100.0	Custody/SAF No	B99-028-58	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.418	3.2	5.5	400	U	H
Total Strontium	SR-RAD	0.058	0.17	0.33	1.0	U	SR
Technetium 99	14133-76-7	4.73	0.64	0.91	15	J	TC
Uranium 233	U-233/234	0.130	0.062	0.059	1.0	J	U
Uranium 235	15117-96-1	-0.009	0.019	0.071	1.0	U	U
Uranium 238	U-238	0.092	0.046	0.059	1.0	J	U

100-HR-3 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-04 B11253

DATA SHEET

SDG	7590	Client/Case no	Hanford	SDG H1175	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012043-04	Client sample id	B11253		
Dept sample id	7590-004	Location/Matrix	100-HR-3	SOLID	
Received	12/07/00	Collected	12/05/00 08:44		
% solids	100.0	Custody/SAF No	B99-028-58	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	2.54	3.3	5.4	400	U	H
Total Strontium	SR-RAD	0.031	0.16	0.32	1.0	U	SR
Technetium 99	14133-76-7	14.9	2.5	4.0	15	J	TC
Uranium 233	U-233/234	0.072	0.048	0.062	1.0	J	U
Uranium 235	15117-96-1	0.010	0.019	0.074	1.0	U	U
Uranium 238	U-238	0.056	0.048	0.062	1.0	U	U

100-HR-3 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-05 B11254

DATA SHEET

SDG	7590	Client/Case no	Hanford	SDG H1175	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012043-05	Client sample id	B11254		
Dept sample id	7590-005	Location/Matrix	100-HR-3	SOLID	
Received	12/07/00	Collected	12/05/00 08:58		
% solids	100.0	Custody/SAF No	B99-028-58	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	38.6	4.5	5.6	400	J	H
Total Strontium	SR-RAD	-0.001	0.17	0.35	1.0	U	SR
Technetium 99	14133-76-7	1180	11	1.2	15		TC
Uranium 233	U-233/234	0.365	0.11	0.058	1.0	J	U
Uranium 235	15117-96-1	0.009	0.018	0.070	1.0	U	U
Uranium 238	U-238	0.327	0.11	0.058	1.0	J	U

100-HR-3 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1175

R012043-06 B11255

DATA SHEET

SDG	7590	Client/Case no	Hanford SDG H1175
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012043-06	Client sample id	B11255
Dept sample id	7590-006	Location/Matrix	100-HR-3 SOLID
Received	12/07/00	Collected	12/05/00 09:08
% solids	100.0	Custody/SAF No	B99-028-58 B99-028

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	77.6	5.5	5.7	400	J	H
Total Strontium	SR-RAD	0.071	0.18	0.36	1.0	U	SR
Technetium 99	14133-76-7	1380	40	1.9	15		TC
Uranium 233	U-233/234	0.180	0.076	0.057	1.0	J	U
Uranium 235	15117-96-1	0	0.018	0.069	1.0	U	U
Uranium 238	U-238	0.142	0.060	0.057	1.0	J	U

100-HR-3 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

Test U Matrix SOLID
SDG 7590
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1175

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 6962-196											
B11250	R012043-01			7590-001	9.62	0.610 J	7.88	122	14	8	2
B11251	R012043-02			7590-002	U	U	U				
B11252	R012043-03			7590-003	0.130 J	U	0.092 J	141	98	-10	21
B11253	R012043-04			7590-004	0.072 J	U	U				
B11254	R012043-05			7590-005	0.365 J	U	0.327 J	112	50	3	6
B11255	R012043-06			7590-006	0.180 J	U	0.142 J	127	76	0	13
BLK (QC ID=37044)	R012043-08			7590-008	U	U	U				
LCS (QC ID=37043)	R012043-07			7590-007	ok	ok	ok				
Duplicate (R012043-05)	R012043-09			7590-009	ok J	- U	ok J	110	56	4	8
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-HR-3 Pump & Treat-Resin Sampling								Averages 122		1	

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 6962-196 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 196																
B11250	R012043-01			0.13	1.04			89		154			21	12/22/00	12/26	SS-044
B11251	R012043-02			0.080	1.00			88		154			21	12/22/00	12/26	SS-045
B11252	R012043-03			0.071	1.04			94		154			21	12/22/00	12/26	SS-046
B11253	R012043-04			0.074	1.09			86		154			21	12/22/00	12/26	SS-047
B11254	R012043-05			0.070	1.13			90		154			21	12/22/00	12/26	SS-048
B11255	R012043-06			0.069	1.09			94		154			21	12/22/00	12/26	SS-050
BLK (QC ID=37044)	R012043-08			0.12	1.00			70		127				12/22/00	12/27	SS-031
LCS (QC ID=37043)	R012043-07			0.47	1.00			77		127				12/22/00	12/27	SS-029
Duplicate (R012043-05) (QC ID=37045)	R012043-09			0.085	1.05			90		127			22	12/22/00	12/27	SS-032
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

Test U	Matrix SOLID
SDG 7590	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1175	

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	MDA	0.13 ± 0.26
FOR 9 SAMPLES	YIELD	86 ± 16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

Test SR Matrix SOLID
SDG 7590
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1175

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6962-196						
B11250	R012043-01			7590-001	U	
B11251	R012043-02			7590-002	U	
B11252	R012043-03			7590-003	U	
B11253	R012043-04			7590-004	U	
B11254	R012043-05			7590-005	U	
B11255	R012043-06			7590-006	U	
BLK (QC ID=37044)	R012043-08			7590-008	U	
LCS (QC ID=37043)	R012043-07			7590-007	ok	
Duplicate (R012043-05)	R012043-09			7590-009	-	U
Nominal values and limits from method 100-HR-3 Pump & Treat-Resin Sampling				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 6962-196 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 196																
B11250	R012043-01			0.25	1.03			86		200			16	12/21/00	12/21	GRB-203
B11251	R012043-02			0.26	1.08			84		200			16	12/21/00	12/21	GRB-204
B11252	R012043-03			0.33	1.09			82		100			16	12/21/00	12/21	GRB-229
B11253	R012043-04			0.32	1.07			83		100			16	12/21/00	12/21	GRB-230
B11254	R012043-05			0.35	1.04			82		100			16	12/21/00	12/21	GRB-231
B11255	R012043-06			0.36	1.00			80		100			16	12/21/00	12/21	GRB-232
BLK (QC ID=37044)	R012043-08			0.34	1.00			79		100				12/21/00	12/21	GRB-203
LCS (QC ID=37043)	R012043-07			0.15	1.00			82		200				12/21/00	12/21	GRB-202
Duplicate (R012043-05) (QC ID=37045)	R012043-09			0.14	1.08			81		200			16	12/21/00	12/21	GRB-203
Nominal values and limits from method				1.0	1.00			30-105		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

Test	SR
Matrix	SOLID
SDG	7590
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1175

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	MDA	0.28	±	0.17
FOR 9 SAMPLES	YIELD	82	±	4

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Test TC Matrix SOLID
SDG 7590
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1175

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6962-196						
B11250	R012043-01			7590-001	U	
B11251	R012043-02			7590-002	U	
B11252	R012043-03			7590-003	4.73	J
B11253	R012043-04			7590-004	14.9	J
B11254	R012043-05			7590-005	1180	
B11255	R012043-06			7590-006	1380	
BLK (QC ID=37044)	R012043-08			7590-008	U	
LCS (QC ID=37043)	R012043-07			7590-007	ok	
Duplicate (R012043-05)	R012043-09			7590-009	ok	
Nominal values and limits from method 100-HR-3 Pump & Treat-Resin Sampling				RDLs (pCi/g)	15	

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 6962-196 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 196																
B11250	R012043-01			1.5	1.05			26		71			34	01/04/01	01/08	GRB-220
B11251	R012043-02			1.6	1.05			30		50			35	01/04/01	01/09	GRB-222
B11252	R012043-03			0.91	1.07			27		184			37	01/04/01	01/11	GRB-204
B11253	R012043-04			4.0	1.02			13		50			35	01/04/01	01/09	GRB-231
B11254	R012043-05			1.2	1.03			40		51			34	01/04/01	01/08	GRB-224
B11255	R012043-06			1.9	1.07			26		50			35	01/04/01	01/09	GRB-232
BLK (QC ID=37044)	R012043-08			1.2	1.00			40		51				01/04/01	01/08	GRB-222
LCS (QC ID=37043)	R012043-07			0.42	1.00			61		200				01/04/01	01/08	GRB-229
Duplicate (R012043-05) (QC ID=37045)	R012043-09			1.2	1.03			40		50			35	01/04/01	01/09	GRB-222
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 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

Test	TC
Matrix	SOLID
SDG	7590
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1175

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	1.5	±	2.0
FOR 9 SAMPLES	YIELD	34	±	27

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/01

Test H Matrix SOLID
SDG 7590
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1175

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6962-196						
B11250	R012043-01			7590-001	U	
B11251	R012043-02			7590-002	8.25	J
B11252	R012043-03			7590-003	U	
B11253	R012043-04			7590-004	U	
B11254	R012043-05			7590-005	38.6	J
B11255	R012043-06			7590-006	77.6	J
BLK (QC ID=37044)	R012043-08			7590-008	U	
LCS (QC ID=37043)	R012043-07			7590-007	ok	
Duplicate (R012043-05)	R012043-09			7590-009	ok	J

Nominal values and limits from method RDLs (pCi/g) 400
100-HR-3 Pump & Treat-Resin Sampling

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 6962-196	2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 196															
B11250	R012043-01			5.7	0.206			100		100			25	12/29/00	12/30	LSC-004
B11251	R012043-02			5.8	0.205			100		100			25	12/29/00	12/30	LSC-004
B11252	R012043-03			5.5	0.213			100		100			25	12/29/00	12/30	LSC-004
B11253	R012043-04			5.4	0.219			100		100			25	12/29/00	12/30	LSC-004
B11254	R012043-05			5.6	0.202			100		100			25	12/29/00	12/30	LSC-004
B11255	R012043-06			5.7	0.204			100		100			26	12/29/00	12/31	LSC-004
BLK (QC ID=37044)	R012043-08			5.9	0.200			100		100				12/29/00	12/30	LSC-004
LCS (QC ID=37043)	R012043-07			5.8	0.200			100		100				12/29/00	12/31	LSC-004
Duplicate (R012043-05) (QC ID=37045)	R012043-09			5.6	0.203			100		100			26	12/29/00	12/31	LSC-004
Nominal values and limits from method				400	0.200					25			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1175

Test H	Matrix SOLID
SDG 7590	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1175	

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

AVERAGES ± 2 SD	MDA	5.7	±	0.32
FOR 9 SAMPLES	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-58	Page 1 of 1
Collector: Fahlberg/Cowgill	Company Contact: T Pickett; Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3 H1175 (7590)	SAF No.: B99-028	Air Quality ☐
Ice Chest No.: ER199-0606 (10ft) RF 12.5.00	Field Logbook No.: EL 1517-1; COA: R10HR3C560	Method of Shipment: Fed EX	
Shipped To: TMA/~~RECRA~~	Offsite Property No.: A010156	Bill of Lading/Air Bill No.: 4235795310 47	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RF 12.5.00

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	G/P a G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	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.		
B11250	OTHER SOLID	12.5.00	0800	X	X	X	X						
B11251	OTHER SOLID	12.5.00	0816	X	X	X	X						
B11252	OTHER SOLID	12.5.00	0832	X	X	X	X						
B11253	OTHER SOLID	12.5.00	0844	X	X	X	X						

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	12.5.00 12.1	Stored in Ref 2-A	12.5.00 12.10
Removed from Ref 2A 3728	12.6.00 0800	R. L. Thorell	12.6.00 0800
R. L. Thorell	12.6.00 0800	FED EX	12-06-00
FED. EXPRESS	12-07-00 10 AM	E. Seguro	12-07-00 10 AM

Sign/Print Names

SPECIAL INSTRUCTIONS

~~(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)

RT 12.6.00

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 12/5/00. Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-59	Page 1 of 1
Collector: Fahlberg/Cowgill	Company Contact: T Pickett; Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3 H1175 (7590)	SAF No.: B99-028	Air Quality ☐
Ice Chest No.: ERC99-006 (1of1)	Field Logbook No.: EL 1517-1; COA: R10HR3C560	Method of Shipment: Fed EX	
Shipped To: TMA/~~RECRA~~ R.F. 12-5-00	Offsite Property No.: A010156	Bill of Lading/Air Bill No.: 42357453 1047	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. R.F. 12-5-00

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	~~GP~~ aG	~~GP~~ aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	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.		
Sample No.	Matrix *	Sample Date	Sample Time							
B11254	OTHER SOLID	12-5-00	0858	X	X	X	X			
B11255	OTHER SOLID	12-5-00	0908	X	X	X	X			

RT 12-6-00

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.F. [illegible] / R.F. Hilber	12-15/00 12:10	R.F. [illegible] / R.F.	12-15-00 12:10
Removed from R.F. 2A 3728	12-6-00 0800	R. Thorell	12-6-00 0800
R. Thorell	12-6-00 0800	FEDEX	12-06-00
FED. EXPRESS	12-07-00 10 AM	E. Segura	12-07-00 10 AM

SPECIAL INSTRUCTIONS

(1) ~~VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichlorofluoromethane}~~

(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 12-6-00

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 12/15/00

Collector not available to relinquish samples on 12/6/00 for shipment.

RT 12-6-00

Matrix *: G=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)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 12-07-00 10:AM

CoC No. B99-028-58 AND B99-028-59,

Container I.D. No. ERC99-066 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: 6
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: 12-07-00 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 _____

JAN 2001 RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11250						
% SOLIDS	001	SO	00L%S195	12/05/00	12/08/00	12/09/00
% SOLIDS	001 REP	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	001	SO	00LXC080	12/05/00	12/15/00	12/15/00
NITRATE BY IC	001 REP	SO	00LXC080	12/05/00	12/15/00	12/15/00
NITRATE BY IC	001 MS	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	001	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11251						
% SOLIDS	002	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	002	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	002	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11252						
% SOLIDS	003	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	003	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	003	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11253						
% SOLIDS	004	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	004	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	004	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11254						
% SOLIDS	005	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	005	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	005	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11255						
% SOLIDS	006	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	006	SO	00LXC080	12/05/00	12/15/00	12/15/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TCLP	006	SO	00LTO144	12/05/00	12/27/00	12/28/00

LAB QC:

NITRATE BY IC	MB1	S	00LXC080	N/A	12/15/00	12/15/00
NITRATE BY IC	MB1 BS	S	00LXC080	N/A	12/15/00	12/15/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-028 H1175
RFW# : 0012L510

W.O. # : 10985-001-001-9999-00
Date Received: 12-07-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 6 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 temperature was 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. The 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

01-19-01
Date

njp\i12-510

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 14 pages.

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

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.

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 BY IC **Method:** SW846 9056

Other: **Method**

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/19/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B11250	% Solids	46.1	%	0.01	1.0
		Nitrate by IC	57	MG/KG	2.7	1.0
-002	B11251	% Solids	45.0	%	0.01	1.0
		Nitrate by IC	46	MG/KG	2.8	1.0
-003	B11252	% Solids	44.3	%	0.01	1.0
		Nitrate by IC	25	MG/KG	2.8	1.0
-004	B11253	% Solids	44.6	%	0.01	1.0
		Nitrate by IC	24	MG/KG	2.8	1.0
-005	B11254	% Solids	47.3	%	0.01	1.0
		Nitrate by IC	26	MG/KG	2.6	1.0
-006	B11255	% Solids	46.0	%	0.01	1.0
		Nitrate by IC	24	MG/KG	2.7	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/19/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC080-MB1	Nitrate by IC	1.2 u	MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/19/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B11250	Nitrate by IC	120	57	54	110.9	1.0
BLANK10	00LXC080-MB1	Nitrate by IC	24	1.2 u	25	96.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/19/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B11250	% Solids	46.1	45.9	0.43	1.0
		Nitrate by IC	57	56	1.5	1.0

RECRA LabNet Use Only

0012L-510-

Custody Transfer Record/Lab Work Request

Page 1 of 12 TK 12-7-00

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~Hanford~~ TRU-Hanford SAF B99-028 TK 12-7-00

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SpC Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due 1-06-01

Account #

		A	B						C		D					
Refrigerator #		1	5						5		5					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Ammonia Nitrate					
													1-2			

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OLC24X	OLC25X					ITCLP		ICNO3			MT①			
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	B11250			SO	12-5-00	0800	✓	✓					✓		✓						
	002	1					0816	✓	✓					✓		✓						
	003	2					0832	✓	✓					✓		✓						
	004	3					0844	✓	✓					✓		✓						
	005	4					0858	✓	✓					✓		✓						
	006	5					0908	✓	✓					✓		✓						
	007	a trip of 001			L	*	-												✓			
	008	1 002					-												✓			
	009	2 003					-												✓			
	010	3 004					-												✓			

Special Instructions:

DATE/REVISIONS:

* 1. See lab chron

MT① 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # See below

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. 20 °C

Relinquished by	Received by	Date	Time
Fed Ex	W. Meuse	12-7-00	945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 1069

RECRA LabNet Use Only
0012L510

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU-Hanford B99-028
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #																	
#/Type Container	Liquid																
	Solid																
Volume	Liquid																
	Solid																
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		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													
011	B11254 top of 005			L	*	-													
012	1 5 1 005			1	1	-													

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ____ °C

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

Relinquished by	Received by	Date	Time
FedEx	W. Musser	12-7-00	0945
	TK 12-7-00		

Relinquished by	Received by	Date	Time

00126510

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-58	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3		SAF No.: B99-028
Ice Chest No.: ERC 96 044 (2 of 2) RT 12600	Field Logbook No.: EL 1517-1	COA: R10HR3C560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RE 12.5.00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 4235 7453 - 1069

Price Code: 9N — Air Quality

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. 1.000 R.F.

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

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		
Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C		
Type of Container	aG	aG	aG	aG	aG	aG	G/P a G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B11250	OTHER SOLID	12.5.00	0800					x	x	x	x		
2	B11251	OTHER SOLID	12.5.00	0816					x	x	x	x		
3	B11252	OTHER SOLID	12.5.00	0832					x	x	x	x		
4	B11253	OTHER SOLID	12.5.00	0844					x	x	x	x		

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg / R.Fahlberg	12.5.00	Stonelin / Ref 2.A	1210 / 12.5.00
Removed from Ref 2.A 3728	0800 12.6.00	R.T. Thore	0800 12.6.00
R.T. Thore	0800 12.6.00	FED EX	
FED EX	12-07-00 9AM	W. Measer	12-7-00 0945

Sign/Print Names

SPECIAL INSTRUCTIONS

(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.# 2A at the 3728 Shipping Facility on 12/5/00.
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

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)

Temp 2.°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-028-59	Page 1 of 1
Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3		SAF No.: B99-028	Air Quality
Ice Chest No.: ERC96-044 (20R)	Field Logbook No.: EL 1517-1	COA: R10HR3C560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA 12-5-00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 4235745 3-1069	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. R.G. 12.6.00

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	~~GP~~ aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	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		
Sample No.	Matrix *	Sample Date	Sample Time							
4 B11254	OTHER SOLID	12-5-00	0858			X	X	X	X		
6 B11255	OTHER SOLID	12-5-00	0908			X	X	X	X		

Delete RT 12.6.00

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 12.5.00 1216	Received By: Ref. 2A Date/Time: 12.5.00 1216
Relinquished By: Removed from Ref. 2A 3728 Date/Time: 12.6.00 0800	Received By: R Thoren Date/Time: 12.6.00 0800
Relinquished By: R Thoren Date/Time: 12.6.00 0800	Received By: FED EX Date/Time:
Relinquished By: FedEx Date/Time: 12-7-00 0945	Received By: W. Meuser Date/Time: 12-7-00 0945
Relinquished By: Date/Time:	Received By: Date/Time:
Relinquished By: Date/Time:	Received By: Date/Time:

SPECIAL INSTRUCTIONS

(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. #2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment.. RT 12.6.00

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)

Figure 1. Sample Check-in List

Date/Time Received: 12-07-00 0945

SDG#: 00/2L-510

Work Order Number: _____ SAF# B99-028

Shipping Container ID: ERC-96-044 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 2°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 24
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ✓ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels

9. Samples are:
   ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: W. Heuser RECRA Date: 12/07/00

Telephoned to: _____ On _____ By _____

JAN 2001 RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11250						
TCLP	001	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11251						
TCLP	002	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11252						
TCLP	003	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11253						
TCLP	004	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11254						
TCLP	005	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11255						
TCLP	006	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11250						
SILVER, TCLP LEACHAT	007	W	99L1861	12/28/00	12/28/00	12/31/00
SILVER, TCLP LEACHAT	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
SILVER, TCLP LEACHAT	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	007	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	007	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	007	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TCLP LEAC	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	007	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	007	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	007	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	007	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	007	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	007	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	007 REP	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	007 MS	W	99L1861	12/28/00	12/28/00	12/31/00
B11251						
SILVER, TCLP LEACHAT	008	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	008	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	008	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	008	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	008	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	008	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	008	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	008	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	008	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	008	W	99L1861	12/28/00	12/28/00	12/31/00
B11252						
SILVER, TCLP LEACHAT	009	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	009	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	009	W	99L1861	12/28/00	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TCLP LEAC	009	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	009	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	009	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	009	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	009	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	009	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	009	W	99L1861	12/28/00	12/28/00	12/31/00
B11253						
SILVER, TCLP LEACHAT	010	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	010	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	010	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	010	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	010	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	010	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	010	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	010	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	010	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	010	W	99L1861	12/28/00	12/28/00	12/31/00
B11254						
SILVER, TCLP LEACHAT	011	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	011	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	011	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	011	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	011	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	011	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	011	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	011	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	011	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	011	W	99L1861	12/28/00	12/28/00	12/31/00
B11255						
SILVER, TCLP LEACHAT	012	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	012	W	99L1861	12/28/00	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TCLP LEACHAT	012	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	012	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	012	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	012	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	012	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	012	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	012	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	012	W	99L1861	12/28/00	12/28/00	12/31/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
SILVER, TCLP LEACHAT	MB1	W	99L1861	N/A	12/28/00	12/31/00
SILVER, TCLP LEACHAT	MB2	W	99L1861	N/A	12/28/00	12/31/00
ARSENIC LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	MB1	W	99L1861	N/A	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	MB2	W	99L1861	N/A	12/28/00	12/31/00
BARIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	MB1	W	99L1861	N/A	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	MB2	W	99L1861	N/A	12/28/00	12/31/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1861	N/A	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1861	N/A	12/28/00	12/31/00
CADMIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	MB1	W	99L1861	N/A	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	MB2	W	99L1861	N/A	12/28/00	12/31/00
CHROMIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	MB1	W	99L1861	N/A	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	MB2	W	99L1861	N/A	12/28/00	12/31/00
NICKEL LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	MB1	W	99L1861	N/A	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	MB2	W	99L1861	N/A	12/28/00	12/31/00
LEAD LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
LEAD, TCLP LEACHATE	MB1	W	99L1861	N/A	12/28/00	12/31/00
LEAD, TCLP LEACHATE	MB2	W	99L1861	N/A	12/28/00	12/31/00
ANTIMONY LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	MB1	W	99L1861	N/A	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	MB2	W	99L1861	N/A	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
SELENIUM, TCLP LEACH	MB1	W	99L1861	N/A	12/28/00	12/31/00
SELENIUM, TCLP LEACH	MB2	W	99L1861	N/A	12/28/00	12/31/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-028
RFW#: 0012L510
SDG/SAF#: H1175/B99-028

W.O.#: 10985-001-001-9999-00
Date Received: 12-07-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 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. The cooler temperature has been recorded on the Chain of Custody.

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), 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. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

11. The TCLP extract from sample B11250 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 20 pages.

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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

gmb/m12-510

01-09-01
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00/2L510.

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 01/09/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B11250	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	17.6		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	5040		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	B11251	Silver, TCLP Leachate	4.8		UG/L	2.5	1.0
		Arsenic, TCLP Leachate	37.6		UG/L	33.9	1.0
		Barium, TCLP Leachate	17.3		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	6420		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 01/09/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B11252	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	11.8		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	3250		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
-010	B11253	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	12.3		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	3130		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 01/09/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	B11254	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	4.4		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	1000		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
-012	B11255	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	3.9		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	984		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 01/09/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1861-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	99L1861-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	4.1		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	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 01/09/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-007	B11250	Silver, TCLP Leachate	3240	2.5 u	5000	64.8	1.0
		Arsenic, TCLP Leachate	5020	33.9 u	5000	100.5	1.0
		Barium, TCLP Leachate	94400	17.6	100000	94.4	1.0
		Beryllium, TCLP Leacha	882	0.60u	1000	88.2	1.0
		Cadmium, TCLP Leachate	942	3.4 u	1000	94.2	1.0
		Chromium, TCLP Leachat	9570	5040	5000	90.6	1.0
		Nickel, TCLP Leachate	939	12.5 u	1000	93.9	1.0
		Lead, TCLP Leachate	4870	25.0 u	5000	97.5	1.0
		Antimony, TCLP Leachat	652	17.0 u	1000	65.2	1.0
		Selenium, TCLP Leachat	995	62.3 u	1000	99.5	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/09/01

CLIENT: TNUHANFORD B99-028 H1175

RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-007REP	B11250	Silver, TCLP Leachate	2.5 u	2.5 u	NC	1.0
		Arsenic, TCLP Leachate	33.9 u	33.9 u	NC	1.0
		Barium, TCLP Leachate	17.6	18.7	6.1	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	5040	4970	1.3	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

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/09/01

CLIENT: TNUHANFORD B99-028 H1175 RECRA LOT #: 0012L510

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1861-LC1	Silver, LCS	485	500	UG/L	97.0
		Arsenic, LCS	10100	10000	UG/L	101.1
		Barium, LCS	4710	5000	UG/L	94.1
		Beryllium, LCS	243	250	UG/L	97.2
		Cadmium, LCS	252	250	UG/L	100.6
		Chromium, LCS	499	500	UG/L	99.9
		Nickel, LCS	2000	2000	UG/L	100.1
		Lead, LCS	2550	2500	UG/L	102.1
		Antimony, LCS	3020	3000	UG/L	100.7
		Selenium, LCS	10000	10000	UG/L	100.4

RECRA LabNet Use Only

0012L-510-

Custody Transfer Record/Lab Work Request

Page 1 of 12 TK 12-7-00

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~Hanford~~ Tru-Hanford SAF B99-028 TK 12-7-00

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 12-7-00 Date Due 1-06-01

Account #

		A	B						C		D					
Refrigerator #		1	5						5		5		5			
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Nitrate Nitrite					
		RECRA LabNet Use Only														
		0624X	0625X						ITCLP		IC NO3		Mct①			

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	0624X	0625X	ITCLP	IC NO3	Mct①
001	B112 50			SO	12-5-00	0800	✓	✓	✓	✓	
002	1					0816	✓	✓	✓	✓	
003	2					0832	✓	✓	✓	✓	
004	3					0844	✓	✓	✓	✓	
005	4					0858	✓	✓	✓	✓	
006	5					0908	✓	✓	✓	✓	
007	0 trip of 001			L	*	-					✓
008	1 002					-					✓
009	2 003					-					✓
010	3 004					-					✓

Special Instructions:

DATE/REVISIONS:

* 1. See lab chron

Mct① 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped or Hand Delivered

Airbill # See Below

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. 20 °C

Relinquished by	Received by	Date	Time
Fed Ex	W. Hersee	12-7-00	945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 1069

017

RECRA LabNet Use Only

0012L510

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: JDU-Hanford 899-028

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del TAT

Date Rec'd: Date Due:

Account #:

Refrigerator #:

#/Type Container: Liquid / Solid

Volume: Liquid / Solid

Preservatives

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

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	Leachate	Metals
011	B11254 top of 005			L	*	-		✓
012	1 5 1 006			1	1	-		✓

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ___ °C

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

Relinquished by	Received by	Date	Time
FedEx	Lamuser TK 12-7-00	12700	0945

Relinquished by	Received by	Date	Time

018

00126510

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-58	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT. SJ	Price Code: 9N — Data Turnaround: 45 Days — Air Quality
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	
Ice Chest No.: ERC 96-044 (Ref) RT 12.6.00	Field Logbook No.: EL 1517-1 — COA: R10HR3C560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA Ref 12.5.00	Offsite Property No.: A010037	Bill of Lading/Air Bill No.: 4235 7453 - 1069	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. 12.5.00 R.F.

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

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		
Preservation	None	None	None	None	Cool 4C B	Cool 4C A	~~None~~ D	None C		
Type of Container	aG	aG	aG	aG	aG	aG	~~aG~~ a. G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B11250	OTHER SOLID	12.5.00	0800					x	x	x	x		
2	B11251	OTHER SOLID	12.5.00	0816					x	x	x	x		
3	B11252	OTHER SOLID	12.5.00	0832					x	x	x	x		
4	B11253	OTHER SOLID	12.5.00	0844					x	x	x	x		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg R.Fahlberg	12.5.00 12 10	Stanulis Ref 2.A	12.5.00 12 10
Removed from Ref 2.A 3728	12.6.00 0800	R.H. Thorey	12.6.00 0800
R.H. Thorey	12.6.00 0800	FED EX	
FED EX	12-07-00 9AM	W. Measel	12-7-00 0945

SPECIAL INSTRUCTIONS

(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.# 2A at the 3728 Shipping Facility on 12/5/00.
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

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

019

BHI-EE-011 (10/99)

Temp 2.°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-59	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	
Ice Chest No.: ERC96-044 (2of2)	Field Logbook No.: EL 1517-1	COA: R10HR3C560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA 12-5-00	Offsite Property No.: A010037	Bill of Lading/Air Bill No.: 42357953-1069	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RF

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

SAMPLE ANALYSIS	Isotopic Uranium	Strontium-89,90 - Total	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.
Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None
Type of Container	aG	aG	aG	aG	aG	aG	~~GA~~ aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL

Deleted 12-6-00 RT

	Sample No.	Matrix *	Sample Date	Sample Time								
4	B11254	OTHER SOLID	12-5-00	0858				X	X	X	X	
6	B11255	OTHER SOLID	12-5-00	0908				X	X	X	X	

CHAIN OF POSSESSION — *Sign/Print Names*

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	12-5-00 1216	Ref. 2A Stored in	12-5-00 1216
Ref 2A 3728	12-6-00 0800	R. Thover	12-6-00 0800
R. Thover	12-6-00 0800	FED EX	
FedEx	12-7-00 0945	W Mercer	12-7-00 0945

SPECIAL INSTRUCTIONS

(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.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment.. RT 12-6-00

*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
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11250	001	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11251	002	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11251	002 MS	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11251	002 MSD	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11252	003	SO	00LE1614	12/05/00	12/08/00	01/02/01
B11253	004	SO	00LE1614	12/05/00	12/08/00	01/02/01
B11254	005	SO	00LE1614	12/05/00	12/08/00	01/02/01
B11255	006	SO	00LE1614	12/05/00	12/08/00	01/02/01

LAB QC:

SBLKJX	MB1	S	00LE1614	N/A	12/08/00	12/29/00

JAN 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-028
RFW #: 0012L510
SDG/SAF #: H1175/B99-028

W.O. #: 10985-001-001-9999-00
Date Received: 12-07-2000

SEMIVOLATILE

Six (6) solid samples were collected on 12-05-2000.

The samples and their associated QC samples were extracted on 12-08-2000 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 12-29-2000 and 01-02-2001.

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

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

2. The samples were extracted and analyzed within required holding times.

3. Six (6) of twenty-seven (27) surrogate recoveries were outside acceptance criteria. The base/neutral surrogate recovery criteria for samples B11252 and B11254 were outside the criteria; however, the recovery of p-Terphenyl-d14 was within criteria; consequently, there was no significant impact on the data. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

4. The samples were inadvertently spiked with 75ug instead of 50ug. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. The blank spike sample went to dryness in the laboratory. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. Six (6) of twelve (12) matrix spike recoveries were out side EPA QC limits; however, the target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

7. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level less than the CRQL.

8. Internal standard area and retention time criteria were met.

9. "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."

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

01-19-01
Date

som\group\data\bna\tnu-hanford-12-510.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 14 pages.

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

RECRA **Sample Discrepancy Report (SDR)** SDR #: 01MS011

Initiator: M. Petry Batch: 00121510 Parameter: BNA
Date: 1-3-1 Samples: 002MS 003 005 BS Matrix: Solid
Client: TNX Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1614

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)

003 + 005 → 2 surrogates each out low <10%
002MS low spike recoveries
BS 2 low spike recoveries – extract went dry on rack

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: JC 1-4-01

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

No re-extract ~~Re-extract samples 003 + 005~~
analysis is for bis(2-Ethylhexyl phthalate only, a late eluting BN
002MSD recoveries ok compared the late eluting
→ reanate 002MS BN surrogate Terphenyl-d meets criteria in all samples

4. Project Manager Instructions...signature/date: 1/7/01

✓ 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: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ 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
1 Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	2	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-In: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00EX197

Initiator: Clara Boothfield Batch: 00LE1614 Parameter: 0625
Date: 12/12/00 Samples: BS Matrix: S
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1614

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)

BS went dry on rack.

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): cracked glassware

3. Discussion and Proposed Action Other Description:

__ 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: _____

__ 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: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ 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
I Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	X	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-In: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

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: 01/08/01 10:26

RFW Batch Number: **0012L510** — Client: **TNUHANFORD B99-028 H1175** — Work Order: 10985001001 — Page: 1a

	Cust ID:	B11250	B11251	B11251	B11251	B11252	B11253
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	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	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	56 %	26 %	25 %	46 %	0 * %	53 %
	2-Fluorobiphenyl	46 %	26 * %	24 * %	45 %	2 * %	58 %
	p-Terphenyl-d14	79 %	49 %	46 %	73 %	102 %	128 %
bis(2-Ethylhexyl)phthalate		700 U	48 JB	2200 U	160 JB	590 JB	210 JB

	Cust ID:	B11254	B11255	SBLKJX
Sample Information	RFW#:	005	006	00LE1614-MB1
	Matrix:	SOLID	SOLID	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	0 * %	66 %	46 %
	2-Fluorobiphenyl	0 * %	65 %	47 %
	p-Terphenyl-d14	95 %	116 %	77 %
bis(2-Ethylhexyl)phthalate		530 JB	1900 U	18 J

*= 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 B99-028 H1175 RFW Lot No.: 0012L510-002

MATRIX Spike - Sample No.: B11251 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	10900	0	2270	21 *	28 -104
N-Nitroso-Di-n-propylamine	10900	0	2730	25 *	41 -126
1,2,4-Trichlorobenzene	10900	0	2400	22 *	38 -107
Acenaphthene	10900	0	2620	24 *	31 -137
2,4-Dinitrotoluene	10900	0	2460	23 *	28 -89
Pyrene	10900	0	3470	32 *	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,4-Dichlorobenzene	10900	4420	41	64 *	27	28 -104
N-Nitroso-Di-n-propylamine	10900	5900	54	74 *	38	41 -126
1,2,4-Trichlorobenzene	10900	4920	45	69 *	23	38 -107
Acenaphthene	10900	5500	51	72 *	19	31 -137
2,4-Dinitrotoluene	10900	5480	50	75 *	47	28 -89
Pyrene	10900	6590	61	63 *	36	35 -142

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

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

COMMENTS:

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10F90

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1167

Matrix: (soil/water) SOIL Lab Sample ID: 0012L490-001

Sample wt/vol: 32.1 (g/mL) G Lab File ID: A122734

Level: (low/med) LOW Date Received: 12/06/00

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 12/07/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 12/28/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.49	100	J
2.	UNKNOWN	18.62	100	J
3.	UNKNOWN	23.05	300	J
4.	ALKANE	23.31	200	J
5.	UNKNOWN	23.41	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJM

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1167

Matrix: (soil/water) SOIL Lab Sample ID: 00LE1603-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D120916

Level: (low/med) LOW Date Received: 12/07/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 12/07/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 12/10/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

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

RECRA LabNet Use Only

0012L-510-

Custody Transfer Record/Lab Work Request

Page 1 of 12 TK 12-7-00

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~HANFORD~~ TRU-Hanford SAF B99-028

Est. Final Proj. Sampling Date TK 12-7-00

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager Q

QC Spec Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due 1-06-01

Account #

		A	B						C		D					
Refrigerator #		1	5						5		5					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Nitrate					
RECRA LabNet Use Only		0624X	0625X						ITCLP		IC NO3					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix SO	Date Collected	Time Collected	0624X	0625X	ITCLP	IC NO3	Mrt(1)
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	B11250			X	12-5-00	0800	✓	✓	✓	✓	
	002	1					0816	✓	✓	✓	✓	
	003	2					0832	✓	✓	✓	✓	
	004	3					0844	✓	✓	✓	✓	
	005	4					0858	✓	✓	✓	✓	
	006	5					0908	✓	✓	✓	✓	
	007	0 top of 001			L	*	-					✓
	008	1 002					-					✓
	009	2 003					-					✓
	010	3 004					-					✓

Special Instructions:

DATE/REVISIONS:

* 1. See lab chron

Mrt(1) 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # See Below

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. 20 °C

Relinquished by	Received by	Date	Time
Fed Ex	W. Meuser	12-7-00	945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7954 1069

RECRA LabNet Use Only

0012L510

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TMU-Hanford 399-028

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del TAT:

Date Rec'd: Date Due:

Account #:

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

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
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	011	B11254 top of 005			L	*	-													
	012	1 5 1 006			1	1	-													

Special Instructions:

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	W. Musser	12700	0945
	TK 12-7-00		

Relinquished by	Received by	Date	Time

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. ___ °C

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

00126510

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-58	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	Air Quality
Ice Chest No.: ERC 96-044 (70B) RT 12600	Field Logbook No.: EL 1517-1 — COA: R10HR3C560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA R.E. 12.5.00	Offsite Property No.: A010037	Bill of Lading/Air Bill No.: 4235 7953 - 1069	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. 1.00 R.E.

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C		
Type of Container	aG	aG	aG	aG	aG	aG	G/P a. G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	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		
1 B11250	OTHER SOLID	12.5.00	0800					x	x	x	x		
2 B11251	OTHER SOLID	12.5.00	0816					x	x	x	x		
3 B11252	OTHER SOLID	12.5.00	0832					x	x	x	x		
4 B11253	OTHER SOLID	12.5.00	0844					x	x	x	x		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg / R.Fahlberg	12.5.00	RT 12600 Storelin / Ref 2.A	12.10 / 12.5.00
Removed from Ref 2.A 3728	0800 12.6.00	R. H. R Thore	0800 12.6.00
R. H. R Thore	0800 12.6.00	FED EX	
FED EX	12-07-00 9:45 AM	W. Meuser	12-7-00 0945

SPECIAL INSTRUCTIONS

(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.# 2A at the 3728
Shipping Facility on 12/15/00.
Collector not available to relinquish samples on 12/16/00 for shipment. RT 12.6.00

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)

Temp 2.0

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-59	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT. SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3		SAF No.: B99-028
Ice Chest No.: ERC96-044 (2 of 2)	Field Logbook No.: EL 1517-1	COA: R10HR3C560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA 12-5-00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 4235745 3-1069

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. 12-5-00 R.F.

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

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
Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None
Type of Container	aG	aG	aG	aG	aG	aG	~~GP~~ aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL

Sample No.	Matrix *	Sample Date	Sample Time	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
4 B11254	OTHER SOLID	12-5-00	0858					x	x	x	x
6 B11255	OTHER SOLID	12-5-00	0908					x	x	x	x

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1216 12-5-00	Ref. 2A Stored in	1210 12-5-00
R.L. moved from Ref. 2A 3728	0800 12-6-00	R L Thorsen	0800 12-6-00
R L Thorsen	0800 12-6-00	FED EX	
FedEX	12-7-00 0945	W. Meuser	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichlorononofluoromethane}
(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.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment.
RT 12-6-00

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 B99-028 H1175

DATE RECEIVED: 12/07/00 RFW LOT # :0012L510

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11250	001	SO	00LVH546	12/05/00	N/A	12/15/00
B11250	001 R1	SO	00LVH546	12/05/00	N/A	12/15/00
B11251	002	SO	00LVH546	12/05/00	N/A	12/15/00
B11251	002 R1	SO	00LVH546	12/05/00	N/A	12/15/00
B11252	003	SO	00LVH546	12/05/00	N/A	12/15/00
B11252	003 MS	SO	00LVH546	12/05/00	N/A	12/15/00
B11252	003 MSD	SO	00LVH546	12/05/00	N/A	12/15/00
B11253	004	SO	00LVH546	12/05/00	N/A	12/15/00
B11254	005	SO	00LVH546	12/05/00	N/A	12/15/00
B11254	005 R1	SO	00LVH548	12/05/00	N/A	12/18/00
B11255	006	SO	00LVH546	12/05/00	N/A	12/15/00
B11255	006 R1	SO	00LVH548	12/05/00	N/A	12/18/00

LAB QC:

VBLKIX	MB1	S	00LVH546	N/A	N/A	12/15/00
VBLKIX	MB1 BS	S	00LVH546	N/A	N/A	12/15/00
VBLKGH	MB1	S	00LVH548	N/A	N/A	12/18/00
VBLKGH	MB1 BS	S	00LVH548	N/A	N/A	12/18/00

JAN 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-028
RFW #: 0012L510
SDG/SAF #: H1175/B99-028

W.O. #: 10985-001-001-9999-00
Date Received: 12-07-2000

GC/MS VOLATILE

Six (6) solid samples were collected on 12-05-2000.

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 12-15,18-2000.

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

2. All samples were analyzed within required holding time.

3. Seven (7) of forty-eight (48) surrogate recoveries were outside EPA QC limits. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B11252. The initial analysis fulfills the reanalysis requirement of sample B11250 RE. Other out of criteria samples B11251 and B11254 were reanalyzed on 12-15,18-2000 and reported.

4. One (1) of ten (10) matrix spike recoveries was 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 blanks contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL.

6. Internal standard area criteria were not met for most of the samples. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B11252. All other out of criteria samples were reanalyzed on 12-15,18-2000 and reported.

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

01-18-01
Date

som\group\data\voa\tnu-hanford-0012-510.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 4 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.

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

MP - Missed Peak: manually added peak not found by automatic quan program.

PA - Peak Assignment: quan report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 01/11/01 22:31

RFW Batch Number: **0012L510** Client: **TNUHANFORD B99-028 H1175** Work Order: 10985001001 Page: 1a

	Cust ID:	B11250	B11250	B11251	B11251	B11252	B11252
Sample Information	RFW#:	001	001	002	002	003	003 MS
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.04	1.09	1.02	1.04	1.09	1.11
	Units:	UG/KG	UG/KG REPREP	UG/KG	UG/KG REPREP	UG/KG	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	82 %	93 %	94 %	92 %	96 %	95 %
	Toluene-d8	138 %	140 %	140 %	146 * %	144 * %	137 %
	Bromofluorobenzene	68 %	62 * %	67 %	64 * %	67 %	59 * %
Trichlorofluoromethane		12 U	12 U	12 U	12 U	12 U	12 U
Methylene Chloride		36 B	30 B	36 B	29 B	34 B	29 B
Chloroform		11 J	11 J	13	13	8 J	8 J

	Cust ID:	B11252	B11253	B11254	B11254	B11255	B11255
Sample Information	RFW#:	003 MSD	004	005	005	006	006
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.06	1.06	1.11	1.06	1.11	1.11
	Units:	UG/KG	UG/KG	UG/KG	UG/KG REPREP	UG/KG	UG/KG REPREP
Surrogate Recovery	1,2-Dichloroethane-d4	94 %	84 %	79 %	78 %	82 %	77 %
	Toluene-d8	135 %	139 %	141 * %	130 %	137 %	139 %
	Bromofluorobenzene	55 * %	72 %	71 %	70 %	74 %	75 %
Trichlorofluoromethane		12 U	12 U	12 U	11 U	12 U	12 U
Methylene Chloride		30 B	28 B	31 B	63 B	30 B	54 B
Chloroform		6 J	8 J	12	9 J	17	15

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 01/11/01 22:31

RFW Batch Number: **0012L510** Client: **TNUHANFORD B99-028 H1175** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKIX**	**VBLKIX BS**	**VBLKGH**	**VBLKGH BS**
Sample Information	RFW#:	**00LVH546-MB1**	**00LVH546-MB1**	**00LVH548-MB1**	**00LVH548-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	1,2-Dichloroethane-d4	90 %	89 %	89 %	88 %
	Toluene-d8	96 %	93 %	98 %	92 %
	Bromofluorobenzene	81 %	78 %	85 %	80 %
Trichlorofluoromethane		5 U	5 U	5 U	5 U
Methylene Chloride		6	2 JB	5	6 B
Chloroform		5 U	5 U	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.: 12L510

Matrix Spike - EPA Sample No.: B11252 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	125.35	0.0000	121.93	97	59-172
Trichloroethene	125.35	0.0000	115.06	92	62-137
Benzene	125.35	0.0000	118.50	94	66-142
Toluene	125.35	0.0000	175.61	140*	59-139
Chlorobenzene	125.35	0.0000	109.96	88	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	120.02	127.47	106	9	22	59-172
Trichloroethene	120.02	112.37	94	2	24	62-137
Benzene	120.02	117.57	98	4	21	66-142
Toluene	120.02	164.08	137	2	21	59-139
Chlorobenzene	120.02	110.99	92	4	21	60-133

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: 1 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.: 12L510

Matrix Spike - EPA Sample No.: VBLKIX 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	48.372	97	59-172
Trichloroethene	50.000	0.0000	43.138	86	62-137
Benzene	50.000	0.0000	46.020	92	66-142
Toluene	50.000	0.0000	49.163	98	59-139
Chlorobenzene	50.000	0.0000	47.557	95	60-133

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:

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.: 12L510

Matrix Spike - EPA Sample No.: VBLKGH 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	51.950	104	59-172
Trichloroethene	50.000	0.0000	46.079	92	62-137
Benzene	50.000	0.0000	47.900	96	66-142
Toluene	50.000	0.0000	49.430	99	59-139
Chlorobenzene	50.000	0.0000	48.721	97	60-133

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

0012L-510-

Custody Transfer Record/Lab Work Request

Page 1 of 12 TK 12-7-00

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~Hanford~~ TRU-Hanford SAF B99-028 TK 12-7-00

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SpC Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due 1-06-01

Account #

		A	B	C	D
Refrigerator #		1	5	5	5
#/Type Container	Liquid				
	Solid	1AG	1AG	1AG	1AG
Volume	Liquid				
	Solid	250	250	500	250
Preservatives		—	—	—	—
ANALYSES REQUESTED →	ORGANIC: VOA				
	ORGANIC: BNA				
	ORGANIC: Pest/PCB				
	ORGANIC: Herb				
	INORG: Metal			ITCLP	
	INORG: CN				
	INORG: Nitrate			NO3	
RECRA LabNet Use Only		OC24X	OC25X		Met①

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	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	Metal	CN	Nitrate	Met①
001	B11250			SO	12-5-00	0800	✓	✓			✓		✓	
002	1					0816	✓	✓			✓		✓	
003	2					0832	✓	✓			✓		✓	
004	3					0844	✓	✓			✓		✓	
005	4					0858	✓	✓			✓		✓	
006	5					0908	✓	✓			✓		✓	
007	0 top of 001			L	*	-								✓
008	1 002					-								✓
009	2 003					-								✓
010	3 004					-								✓

Special Instructions:

DATE/REVISIONS:
1. * See lab chron
2. Met① As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped or Hand Delivered
Airbill # See below
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. 20 °C

Relinquished by	Received by	Date	Time
Fed Ex	W. Meisce	12-7-00	945

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
4235 7954 1069

RECRA LabNet Use Only
00121510

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TMU- Hanford B99-028

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del TAT

Date Rec'd: Date Due:

Account #:

Refrigerator #:

#/Type Container: Liquid / Solid

Volume: Liquid / Solid

Preservatives:

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

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	Metals
011	B11254 top of 005			L	*	-	✓
012	1 5 1 core			1	1	-	✓

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # ___

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ___ °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
FedEx	W. Maiser TK 12-7-00	12700	0945

Relinquished by	Received by	Date	Time

W1026310

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-58	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3		SAF No.: B99-028
Ice Chest No.: ERC 96-08044 (2 of 2) RT 12.6.00	Field Logbook No.: EL 1517-1	COA: R10HR3C560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RT 12.5.00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 4235 7453 - 1069

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. 1st. 5.00 R. F.

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C		
Type of Container	aG	aG	aG	aG	aG	aG	G/P a. G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	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		
B11250	OTHER SOLID	12.5.00	0800					x	x	x	x		
B11251	OTHER SOLID	12.5.00	0816					x	x	x	x		
B11252	OTHER SOLID	12.5.00	0832					x	x	x	x		
B11253	OTHER SOLID	12.5.00	0844					x	x	x	x		

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	12.5.00 12 10	Stonelin / Ref 2.A	12.5.00 1210
Removed from Ref 2.A 3728	12.6.00 0800	R. T. Thorne	12.6.00 0800
R. T. Thorne	12.6.00 0800	FED EX	
FED EX	12-07-00 9:45 AM	W. Measel	12-7-00 0945

SPECIAL INSTRUCTIONS

(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.# 2A at the 3728 Shipping Facility on 12/5/00.
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

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)

Temp 2.°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-59	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT. SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	
Ice Chest No.: ERC96-044 (2of2)	Field Logbook No.: EL 1517-1	COA: R10HR3C560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA 12-5-00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 42357453-1069

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. 12-5-00 R.F.

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

SAMPLE ANALYSIS													
			Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
			Type of Container	aG	aG	aG	aG	aG	aG	~~GP~~ aG	aG		
			No. of Container(s)	1	1	1	1	1	1	1	1		
			Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		
				Isotopic Uranium	Strontium 89,90 - Total Sr	Technicium-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		
Sample No.	Matrix *	Sample Date	Sample Time										
B11254	OTHER SOLID	12-5-00	0858					x	x	x	x		
B11255	OTHER SOLID	12-5-00	0908					x	x	x	x		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1216 12-5-00	Ref. 2A	1210 12-5-00
Ref 2A 3728	0800 12-6-00	R. Thorer	0800 12-6-00
R. Thorer	0800 12-6-00	FED EX	
FED EX	12-7-00 0945	W. Mercer	12-7-00 0945

SPECIAL INSTRUCTIONS

(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.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment.. RT 12-6-00

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)