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1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0510 is composed of seven solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were transmitted to BHI via facsimile on October 19, 1999 (Nickel-63, Technetium-99, Tritium, Total Strontium, Total Uranium and Americium-241), October 21 (Isotopic Uranium and Isotopic Thorium) and October 22 (Gamma Scan).

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Total and Isotopic Uranium Analyses

Isotopic analyses were to be based on the results from the total uranium analyses. Isotopic Uranium was requested on sample B0W6B4. No problems were encountered during the course of the analyses.

2.3 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses. A recount was performed on sample B0W6B6.

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses. A recount was performed on sample B0W6B5.

2.6 Tritium Analyses

No problems were encountered during the course of the analyses.

2.7 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.8 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

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2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

LAB SAMPLE SUMMARY

SDG 7191
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
N908172-09	Lab Control Sample		SOLID		B99-078		
N908172-10	Method Blank		SOLID		B99-078		
N909019-01	BOW6B7	GP-5>15'bgs	SOLID		B99-078	B99-078-94	08/30/99 09:04
N909019-02	BOW6B8	GP-5>15'bgs	SOLID		B99-078	B99-078-94	08/30/99 09:25
N909019-03	BOW6B2	GP-5>15'bgs	SOLID		B99-078	B99-078-89	08/30/99 07:45
N909019-04	BOW6B3	GP-5>15'bgs	SOLID		B99-078	B99-078-89	08/30/99 08:00
N909019-05	BOW6B4	GP-5>15'bgs	SOLID		B99-078	B99-078-89	08/30/99 08:11
N909019-06	BOW6B5	GP-5>15'bgs	SOLID		B99-078	B99-078-89	08/30/99 08:31
N909019-07	BOW6B6	GP-5>15'bgs	SOLID		B99-078	B99-078-89	08/30/99 08:48
N909019-08	Lab Control Sample		SOLID		B99-078		
N909019-09	Method Blank		SOLID		B99-078		
N909019-10	Duplicate (N909019-01)	GP-5>15'bgs	SOLID		B99-078		08/30/99 09:04
N909019-11	Duplicate (N909019-03)	GP-5>15'bgs	SOLID		B99-078		08/30/99 07:45
N909019-12	Duplicate (N909019-05)	GP-5>15'bgs	SOLID		B99-078		08/30/99 08:11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/22/99

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SAMPLE DELIVERY GROUP H0510

QC SUMMARY

SDG 7191
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

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
7189		Method Blank	SOLID						N908172-10	7189-010
		Lab Control Sample	SOLID						N908172-09	7189-009
7191	B99-078-89	BOW6B2	SOLID	93.3			09/01/99	2	N909019-03	7191-003
		BOW6B3	SOLID	97.0			09/01/99	2	N909019-04	7191-004
		BOW6B4	SOLID	96.0			09/01/99	2	N909019-05	7191-005
		BOW6B5	SOLID	97.0			09/01/99	2	N909019-06	7191-006
		BOW6B6	SOLID	94.8			09/01/99	2	N909019-07	7191-007
	B99-078-94	BOW6B7	SOLID	94.0			09/01/99	2	N909019-01	7191-001
		BOW6B8	SOLID	96.3			09/01/99	2	N909019-02	7191-002
		Method Blank	SOLID						N909019-09	7191-009
		Lab Control Sample	SOLID						N909019-08	7191-008
		Duplicate (N909019-01)	SOLID	94.0			09/01/99	2	N909019-10	7191-010
		Duplicate (N909019-03)	SOLID	93.3			09/01/99	2	N909019-11	7191-011
		Duplicate (N909019-05)	SOLID				09/01/99	2	N909019-12	7191-012

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
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SAMPLE DELIVERY GROUP H0510

SDG 7191
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6893-137	5.0	7			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-137	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-137	5.0	7			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6893-137	5.0	1					1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-137	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-125	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-137	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-137	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-130	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-125	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
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Version 3.06
Report date 10/22/99

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SAMPLE DELIVERY GROUP H0510

SDG 7191
Contact Kevin C. Johnson

LAB WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
N908172-09	Lab Control Sample			7189-009	H		10/04/99	10/18/99	NJV	Tritium in Soil
			SOLID							
		B99-078								
N908172-10	Method Blank			7189-010	H		10/04/99	10/18/99	NJV	Tritium in Soil
			SOLID							
		B99-078								
N909019-01	BOW6B7			7191-001	AM		10/15/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-001	GAM		10/21/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-94	B99-078		7191-001	H		10/05/99	10/19/99	NJV	Tritium in Soil
				7191-001	NI_L		10/07/99	10/19/99	NJV	Nickel 63 in Soil
				7191-001	PU		10/18/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-001	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-001	TC		10/12/99	10/19/99	NJV	Technetium 99 in Soil
				7191-001	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-001	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-02	BOW6B8			7191-002	AM		10/15/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-002	GAM		10/21/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-94	B99-078		7191-002	H		10/05/99	10/19/99	NJV	Tritium in Soil
				7191-002	NI_L		10/07/99	10/19/99	NJV	Nickel 63 in Soil
				7191-002	PU		10/18/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-002	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-002	TC		10/13/99	10/19/99	NJV	Technetium 99 in Soil
				7191-002	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-002	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-03	BOW6B2			7191-003	AM		10/15/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-003	GAM		10/19/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-89	B99-078		7191-003	PU		10/18/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-003	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-003	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-003	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil

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SAMPLE DELIVERY GROUP H0510

SDG 7191
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
N909019-04	BOW6B3			7191-004	AM		10/15/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-004	GAM		10/21/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-89	B99-078		7191-004	PU		10/18/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-004	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-004	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-004	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-05	BOW6B4			7191-005	AM		10/16/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-005	GAM		10/12/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-89	B99-078		7191-005	PU		10/18/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-005	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-005	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-005	U		10/14/99	10/21/99	NJV	Uranium, Isotopic in Soil
				7191-005	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-06	BOW6B5			7191-006	AM		10/18/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-006	GAM		10/12/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-89	B99-078		7191-006	PU		10/18/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-006	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-006	TH		10/19/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-006	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-07	BOW6B6			7191-007	AM		10/16/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-007	GAM		10/21/99	10/22/99	NJV	Gamma Scan
09/01/99	B99-078-89	B99-078		7191-007	PU		10/19/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-007	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-007	TH		10/20/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-007	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-08	Lab Control Sample			7191-008	AM		10/15/99	10/19/99	NJV	Americium 241 in Soil
			SOLID	7191-008	GAM		10/12/99	10/22/99	NJV	Gamma Scan
		B99-078		7191-008	NI_L		10/07/99	10/19/99	NJV	Nickel 63 in Soil
				7191-008	PU		10/19/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-008	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-008	TC		10/11/99	10/19/99	NJV	Technetium 99 in Soil
				7191-008	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-008	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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SAMPLE DELIVERY GROUP H0510

SDG 7191
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
N909019-09	Method Blank			7191-009	AM		10/16/99	10/19/99	NJV	Americium 241 in Soil
			SOLID	7191-009	GAM		10/12/99	10/22/99	NJV	Gamma Scan
		B99-078		7191-009	NI_L		10/07/99	10/19/99	NJV	Nickel 63 in Soil
				7191-009	PU		10/19/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-009	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-009	TC		10/11/99	10/19/99	NJV	Technetium 99 in Soil
				7191-009	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-009	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-10	Duplicate (N909019-01)			7191-010	H		10/05/99	10/19/99	NJV	Tritium in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-010	NI_L		10/07/99	10/19/99	NJV	Nickel 63 in Soil
09/01/99		B99-078		7191-010	TC		10/12/99	10/19/99	NJV	Technetium 99 in Soil
N909019-11	Duplicate (N909019-03)			7191-011	AM		10/16/99	10/19/99	NJV	Americium 241 in Soil
08/30/99	GP-5>15'bgs		SOLID	7191-011	GAM		10/13/99	10/22/99	NJV	Gamma Scan
09/01/99		B99-078		7191-011	PU		10/20/99	10/21/99	NJV	Plutonium, Isotopic in Solids
				7191-011	SR		10/07/99	10/19/99	NJV	Total Strontium in Soil
				7191-011	TH		10/18/99	10/21/99	NJV	Thorium, Isotopic in Soil
				7191-011	U_T		10/19/99	10/19/99	NJV	Uranium, Total in Soil
N909019-12	Duplicate (N909019-05)			7191-012	U		10/15/99	10/21/99	NJV	Uranium, Isotopic in Soil
08/30/99	GP-5>15'bgs		SOLID							
09/01/99		B99-078								

Lab id TMANC
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SAMPLE DELIVERY GROUP H0510

SDG 7191
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	7			1	1	1	10
GAM	B99-078	Gamma Scan	GAMMAHI	7			1	1	1	10
H	B99-078	Tritium in Soil	EPA906.0	2			1	1	1	5
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	2			1	1	1	5
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	7			1	1	1	10
SR	B99-078	Total Strontium in Soil	SRTOTAL	7			1	1	1	10
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	7			1	1	1	10
U	B99-078	Uranium, Isotopic in Soil	UPLATE	1					1	2
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	1	10
TOTALS				49			9	9	10	77

Lab id TMANC
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SAMPLE DELIVERY GROUP H0510

7189-010 Method Blank

METHOD BLANK

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-10	Client sample id	Method Blank
Dept sample id	7189-010	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.020	0.040	0.070	400	U	H
Total Uranium (ug/g)	7440-61-1	N.A.			1.0		U_T
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Americium 241	14596-10-2	N.A.			1.0		AM
Total Strontium	SR-RAD	N.A.			1.0		SR
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 31847

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-009 Method Blank

METHOD BLANK

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-09	Client sample id	Method Blank
Dept sample id	7191-009	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Technetium 99	14133-76-7	0.243	0.66	0.30	15	U	TC
Total Uranium (ug/g)	7440-61-1	0	0.003	0.007	1.0	U	U_T
Plutonium 238	13981-16-3	0	0.027	0.064	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.018	0.049	1.0	U	PU
Nickel 63	13981-37-8	-2.71	1.5	2.6	30	U	NI_L
Americium 241	14596-10-2	0.019	0.056	0.092	1.0	U	AM
Total Strontium	SR-RAD	-0.102	0.39	0.39	1.0	U	SR
Thorium 228	14274-82-9	-0.017	0.057	0.12	1.0	U	TH
Thorium 230	14269-63-7	0.029	0.091	0.16	1.0	U	TH
Thorium 232	TH-232	0.011	0.023	0.044	1.0	U	TH
Potassium 40	13966-00-2	U		0.33		U	GAM
Cobalt 60	10198-40-0	U		0.011	0.050	U	GAM
Cesium 137	10045-97-3	U		0.009	0.10	U	GAM
Europium 152	14683-23-9	U		0.031	0.10	U	GAM
Europium 154	15585-10-1	U		0.034	0.10	U	GAM
Europium 155	14391-16-3	U		0.037	0.10	U	GAM
Radium 226	13982-63-3	U		0.022	0.10	U	GAM
Radium 228	15262-20-1	U		0.044	0.20	U	GAM
Thorium 228	14274-82-9	U		0.019		U	GAM
Thorium 232	TH-232	U		0.044		U	GAM
Americium 241	14596-10-2	U		0.068		U	GAM
Uranium 238	U-238	U		1.4		U	GAM
Uranium 235	15117-96-1	U		0.050		U	GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 31857

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7189-009

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7191

Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0510

Case no TRB-SBB-207925

Lab sample id N908172-09

Dept sample id 7189-009

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

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	6.33	0.14	0.071	400	J	H	6.03	0.24	105	83-117	80-120
Total Uranium (ug/g)	N.A.			1.0		U_T					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Americium 241	N.A.			1.0		AM					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 230	N.A.			1.0		TH					
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 31846

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-008

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7191

Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0510

Case no TRB-SBB-207925

Lab sample id N909019-08

Dept sample id 7191-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

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
Technetium 99	45.5	0.74	0.23	15		TC	48.0	1.9	95	84-116	80-120
Total Uranium (ug/g)	40.6	12	0.073	1.0		U_T	41.2	1.6	99	54-146	80-120
Plutonium 238	11.4	0.90	0.052	1.0		PU	12.5	0.50	91	86-114	80-120
Plutonium 239/240	12.3	0.96	0.046	1.0		PU	13.2	0.53	93	86-114	80-120
Nickel 63	170	4.0	2.5	30		NI_L	167	6.7	102	83-117	
Americium 241	10.0	0.60	0.034	1.0		AM	11.5	0.46	87	88-112	80-120
Total Strontium	13.6	0.78	0.50	1.0		SR	12.4	0.50	110	80-120	
Thorium 230	23.6	1.1	0.17	1.0		TH	22.4	0.90	105	88-112	
Cobalt 60	0.375	0.017	0.010	0.050		GAM	0.373	0.015	100	76-124	80-120
Cesium 137	0.322	0.013	0.010	0.10		GAM	0.404	0.016	80	80-120	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 31856

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-010

BOW6B7

DUPLICATE

SDG	7191			Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N909019-10	Lab sample id	N909019-01	Client sample id	BOW6B7
Dept sample id	7191-010	Dept sample id	7191-001	Location/Matrix	GP-5>15'bgs SOLID
		Received	09/01/99	Collected	08/30/99 09:04
% solids	94.0	% solids	94.0	Custody/SAF No	B99-078-94 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	0.004	0.042	0.071	400	U	H	-0.026	0.040	0.070	U	-		
Technetium 99	-0.142	0.24	0.40	15	U	TC	0.194	0.19	0.48	U	-		
Nickel 63	-2.59	1.7	3.0	30	U	NI_L	-2.22	2.0	3.4	U	-		

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#1 31858

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-011 BOW6B2

DUPLICATE

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N909019-11	Lab sample id	N909019-03
Dept sample id	7191-011	Dept sample id	7191-003
		Received	09/01/99
% solids	93.3	% solids	93.3
Client sample id	BOW6B2		
Location/Matrix	GP-5>15'bgs SOLID		
Collected	08/30/99 07:45		
Custody/SAF No	B99-078-89 B99-078		

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
Total Uranium (ug/g)	0.532	0.16	0.007	1.0	J	U_T	0.563	0.17	0.007	J	6	67
Plutonium 238	0.005	0.021	0.051	1.0	U	PU	0.019	0.031	0.047	U	-	
Plutonium 239/240	-0.005	0.021	0.051	1.0	U	PU	0.004	0.015	0.029	U	-	
Americium 241	0.004	0.040	0.070	1.0	U	AM	-0.003	0.019	0.039	U	-	
Total Strontium	-0.023	0.083	0.15	1.0	U	SR	-0.006	0.14	0.19	U	-	
Thorium 228	0.463	0.13	0.12	1.0	J	TH	0.509	0.16	0.15	J	9	65
Thorium 230	0.448	0.14	0.16	1.0	J	TH	0.551	0.17	0.16	J	21	67
Thorium 232	0.434	0.11	0.054	1.0	J	TH	0.430	0.12	0.082	J	1	58
Potassium 40	10.7	0.60	0.29			GAM	11.8	0.60	0.32		10	34
Cobalt 60	U		0.035	0.050	U	GAM	U		0.031	U	-	
Cesium 137	U		0.034	0.10	U	GAM	U		0.028	U	-	
Europium 152	U		0.082	0.10	U	GAM	U		0.076	U	-	
Europium 154	U		0.12	0.10	U	GAM	U		0.099	U	-	
Europium 155	U		0.094	0.10	U	GAM	U		0.11	U	-	
Radium 226	0.717	0.064	0.059	0.10		GAM	0.730	0.060	0.054		2	37
Radium 228	0.984	0.15	0.15	0.20		GAM	1.01	0.12	0.11		3	43
Thorium 228	0.981	0.042	0.039			GAM	0.916	0.044	0.040		7	33
Thorium 232	0.984	0.15	0.15			GAM	1.01	0.12	0.11		3	43
Americium 241	U		0.14		U	GAM	U		0.26	U	-	
Uranium 238	U		4.2		U	GAM	U		3.5	U	-	
Uranium 235	U		0.14		U	GAM	U		0.13	U	-	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#3 31859

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-012

BOW6B4

DUPLICATE

SDG	7191			Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N909019-12	Lab sample id	N909019-05	Client sample id	BOW6B4
Dept sample id	7191-012	Dept sample id	7191-005	Location/Matrix	GP-5>15'bgs SOLID
		Received	09/01/99	Collected	08/30/99 08:11
		% solids	96.0	Custody/SAF No	B99-078-89 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Uranium 233/234	0.542	0.15	0.067	1.0	J	U	0.443	0.14	0.071	J	20	63	
Uranium 235	0.053	0.043	0.081	1.0	U	U	0.045	0.045	0.086	U	-		
Uranium 238	0.472	0.13	0.067	1.0	J	U	0.480	0.14	0.071	J	2	61	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#5 32043

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-001 BOW6B7

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-01	Client sample id	BOW6B7
Dept sample id	7191-001	Location/Matrix	GP-5>15'bgs SOLID
Received	09/01/99	Collected	08/30/99 09:04
% solids	94.0	Custody/SAF No	B99-078-94 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.026	0.040	0.070	400	U	H
Technetium 99	14133-76-7	0.194	0.19	0.48	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.510	0.15	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.011	0.022	0.036	1.0	U	PU
Plutonium 239/240	PU-239/240	0.019	0.022	0.041	1.0	U	PU
Nickel 63	13981-37-8	-2.22	2.0	3.4	30	U	NI_L
Americium 241	14596-10-2	0.033	0.037	0.051	1.0	U	AM
Total Strontium	SR-RAD	0.019	0.095	0.13	1.0	U	SR
Thorium 228	14274-82-9	0.205	0.11	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.241	0.11	0.13	1.0	J	TH
Thorium 232	TH-232	0.204	0.075	0.047	1.0	J	TH
Potassium 40	13966-00-2	11.2	0.67	0.32			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Europium 152	14683-23-9	U		0.078	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.081	0.10	U	GAM
Radium 226	13982-63-3	0.490	0.062	0.060	0.10		GAM
Radium 228	15262-20-1	0.692	0.13	0.13	0.20		GAM
Thorium 228	14274-82-9	0.603	0.038	0.038			GAM
Thorium 232	TH-232	0.692	0.13	0.13			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-002 BOW6B8

DATA SHEET

SDG	7191	Client/Case no	Hanford	SDG-H0510	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909019-02	Client sample id	BOW6B8		
Dept sample id	7191-002	Location/Matrix	GP-5>15'bgs	SOLID	
Received	09/01/99	Collected	08/30/99 09:25		
% solids	96.3	Custody/SAF No	B99-078-94	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.036	0.040	0.070	400	U	H
Technetium 99	14133-76-7	-0.058	0.15	0.46	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.629	0.19	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.020	0.020	0.051	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.010	0.013	0.041	1.0	U	PU
Nickel 63	13981-37-8	-3.73	2.8	4.9	30	U	NI_L
Americium 241	14596-10-2	0	0.017	0.027	1.0	U	AM
Total Strontium	SR-RAD	-0.027	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.477	0.13	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.388	0.15	0.17	1.0	J	TH
Thorium 232	TH-232	0.366	0.12	0.081	1.0	J	TH
Potassium 40	13966-00-2	10.4	0.40	0.18			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.016	0.10	U	GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.060	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Radium 226	13982-63-3	0.369	0.036	0.035	0.10		GAM
Radium 228	15262-20-1	0.543	0.082	0.080	0.20		GAM
Thorium 228	14274-82-9	0.497	0.023	0.021			GAM
Thorium 232	TH-232	0.543	0.082	0.080			GAM
Americium 241	14596-10-2	U		0.054		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.068		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-003 BOW6B2

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-03	Client sample id	BOW6B2
Dept sample id	7191-003	Location/Matrix	GP-5>15'bgs SOLID
Received	09/01/99	Collected	08/30/99 07:45
% solids	93.3	Custody/SAF No	B99-078-89 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.563	0.17	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.019	0.031	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.015	0.029	1.0	U	PU
Americium 241	14596-10-2	-0.003	0.019	0.039	1.0	U	AM
Total Strontium	SR-RAD	-0.006	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.509	0.16	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.551	0.17	0.16	1.0	J	TH
Thorium 232	TH-232	0.430	0.12	0.082	1.0	J	TH
Potassium 40	13966-00-2	11.8	0.60	0.32			GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Europium 152	14683-23-9	U		0.076	0.10	U	GAM
Europium 154	15585-10-1	U		0.099	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.730	0.060	0.054	0.10		GAM
Radium 228	15262-20-1	1.01	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	0.916	0.044	0.040			GAM
Thorium 232	TH-232	1.01	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.26		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-004 BOW6B3

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-04	Client sample id	BOW6B3
Dept sample id	7191-004	Location/Matrix	GP-5>15'bgs SOLID
Received	09/01/99	Collected	08/30/99 08:00
% solids	97.0	Custody/SAF No	B99-078-89 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.418	0.12	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.007	0.021	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	0.011	0.028	0.047	1.0	U	PU
Americium 241	14596-10-2	-0.008	0.016	0.043	1.0	U	AM
Total Strontium	SR-RAD	0.163	0.13	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.240	0.11	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.146	0.12	0.17	1.0	U	TH
Thorium 232	TH-232	0.166	0.080	0.089	1.0	J	TH
Potassium 40	13966-00-2	9.24	0.46	0.20			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.10	U	GAM
Europium 152	14683-23-9	U		0.054	0.10	U	GAM
Europium 154	15585-10-1	U		0.076	0.10	U	GAM
Europium 155	14391-16-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.398	0.050	0.047	0.10		GAM
Radium 228	15262-20-1	0.565	0.10	0.097	0.20		GAM
Thorium 228	14274-82-9	0.637	0.048	0.045			GAM
Thorium 232	TH-232	0.565	0.10	0.097			GAM
Americium 241	14596-10-2	U		0.19		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.096		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-005 BOW6B4

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-05	Client sample id	BOW6B4
Dept sample id	7191-005	Location/Matrix	GP-5>15'bgs SOLID
Received	09/01/99	Collected	08/30/99 08:11
% solids	96.0	Custody/SAF No	B99-078-89 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.443	0.14	0.071	1.0	J	U
Uranium 235	15117-96-1	0.045	0.045	0.086	1.0	U	U
Uranium 238	U-238	0.480	0.14	0.071	1.0	J	U
Total Uranium (ug/g)	7440-61-1	1.24	0.37	0.007	1.0		U_T
Plutonium 238	13981-16-3	0	0.008	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.016	0.038	1.0	U	PU
Americium 241	14596-10-2	-0.024	0.049	0.11	1.0	U	AM
Total Strontium	SR-RAD	0.052	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.168	0.084	0.12	1.0	J	TH
Thorium 230	14269-63-7	0.189	0.11	0.16	1.0	J	TH
Thorium 232	TH-232	0.238	0.084	0.054	1.0	J	TH
Potassium 40	13966-00-2	10.4	0.65	0.30			GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Europium 152	14683-23-9	U		0.077	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.087	0.10	U	GAM
Radium 226	13982-63-3	0.448	0.058	0.051	0.10		GAM
Radium 228	15262-20-1	0.632	0.13	0.12	0.20		GAM
Thorium 228	14274-82-9	0.558	0.037	0.036			GAM
Thorium 232	TH-232	0.632	0.13	0.12			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		4.4		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-006 BOW6B5

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-06	Client sample id	BOW6B5
Dept sample id	7191-006	Location/Matrix	GP-5>15'bgs SOLID
Received	09/01/99	Collected	08/30/99 08:31
% solids	97.0	Custody/SAF No	B99-078-89 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.430	0.13	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.004	0.015	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.012	0.015	0.042	1.0	U	PU
Americium 241	14596-10-2	0.028	0.032	0.050	1.0	U	AM
Total Strontium	SR-RAD	0.092	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.257	0.19	0.28	1.0	U	TH
Thorium 230	14269-63-7	0.500	0.19	0.17	1.0	J	TH
Thorium 232	TH-232	0.174	0.093	0.11	1.0	J	TH
Potassium 40	13966-00-2	9.70	0.38	0.15			GAM
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.038	0.10	U	GAM
Europium 154	15585-10-1	U		0.059	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.373	0.033	0.028	0.10		GAM
Radium 228	15262-20-1	0.483	0.076	0.075	0.20		GAM
Thorium 228	14274-82-9	0.479	0.022	0.020			GAM
Thorium 232	TH-232	0.483	0.076	0.075			GAM
Americium 241	14596-10-2	U		0.053		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

7191-007 BOW6B6

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG-H0510
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909019-07	Client sample id	BOW6B6
Dept sample id	7191-007	Location/Matrix	GP-5>15'bgs SOLID
Received	09/01/99	Collected	08/30/99 08:48
% solids	94.8	Custody/SAF No	B99-078-89 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.481	0.14	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.005	0.030	0.072	1.0	U	PU
Plutonium 239/240	PU-239/240	0.005	0.030	0.055	1.0	U	PU
Americium 241	14596-10-2	0.004	0.035	0.067	1.0	U	AM
Total Strontium	SR-RAD	-0.048	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.315	0.14	0.18	1.0	J	TH
Thorium 230	14269-63-7	0.349	0.14	0.15	1.0	J	TH
Thorium 232	TH-232	0.233	0.090	0.069	1.0	J	TH
Potassium 40	13966-00-2	10.9	0.67	0.40			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Europium 152	14683-23-9	U		0.082	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.082	0.10	U	GAM
Radium 226	13982-63-3	0.504	0.068	0.064	0.10		GAM
Radium 228	15262-20-1	0.764	0.16	0.15	0.20		GAM
Thorium 228	14274-82-9	0.610	0.039	0.039			GAM
Thorium 232	TH-232	0.764	0.16	0.15			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test AM Matrix SOLID
SDG 7191
Contact Kevin C. Johnson

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241	
Preparation batch 6893-137						
N909019-01			7191-001	BOW6B7	U	
N909019-02			7191-002	BOW6B8	U	
N909019-03			7191-003	BOW6B2	U	
N909019-04			7191-004	BOW6B3	U	
N909019-05			7191-005	BOW6B4	U	
N909019-06			7191-006	BOW6B5	U	
N909019-07			7191-007	BOW6B6	U	
N909019-08			7191-008	LCS (QC ID=31856)	LOW	
N909019-09			7191-009	BLK (QC ID=31857)	U	
N909019-11			7191-011	Duplicate (N909019-03)	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-137			2σ prep error 5.0 % Reference Lab Notebook 6893 pg.137													
N909019-01			BOW6B7	0.051	0.500			49		1060			46	10/15/99	10/15	SS-015
N909019-02			BOW6B8	0.027	0.500			82		1060			46	10/15/99	10/15	SS-016
N909019-03			BOW6B2	0.039	0.500			73		1004			46	10/15/99	10/15	SS-005
N909019-04			BOW6B3	0.043	0.500			58		1004			46	10/15/99	10/15	SS-006
N909019-05			BOW6B4	0.11	0.500			52		721			47	10/15/99	10/16	SS-049
N909019-06			BOW6B5	0.050	0.500			68		862			49	10/15/99	10/18	SS-008
N909019-07			BOW6B6	0.067	0.500			73		722			47	10/15/99	10/16	SS-044
N909019-08			LCS (QC ID=31856)	0.034	0.500			84		1025				10/15/99	10/15	SS-066
N909019-09			BLK (QC ID=31857)	0.092	0.500			67		722				10/15/99	10/16	SS-045
N909019-11			Duplicate (N909019-03) (QC ID=31859)	0.070	0.500			80		721			47	10/15/99	10/16	SS-048
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test AM	Matrix SOLID
SDG 7191	
Contact Kevin C. Johnson	

LAB METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0510	

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.058	±	0.053
FOR 10 SAMPLES	YIELD	69	±	25

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test	PU
Matrix	SOLID
SDG	7191
Contact	Kevin C. Johnson

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-137								
N909019-01			7191-001	BOW6B7	U		U	
N909019-02			7191-002	BOW6B8	U		U	
N909019-03			7191-003	BOW6B2	U		U	
N909019-04			7191-004	BOW6B3	U		U	
N909019-05			7191-005	BOW6B4	U		U	
N909019-06			7191-006	BOW6B5	U		U	
N909019-07			7191-007	BOW6B6	U		U	
N909019-08			7191-008	LCS (QC ID=31856)	ok		ok	
N909019-09			7191-009	BLK (QC ID=31857)	U		U	
N909019-11			7191-011	Duplicate (N909019-03)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source chrctztn-200-CW-1 OU								

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-137			2σ prep error 5.0 %	Reference Lab Notebook 6893 pg.137												
N909019-01			BOW6B7	0.041	0.500			71		863			49	10/18/99	10/18	SS-010
N909019-02			BOW6B8	0.051	0.500			84		863			49	10/18/99	10/18	SS-012
N909019-03			BOW6B2	0.047	0.500			74		863			49	10/18/99	10/18	SS-013
N909019-04			BOW6B3	0.047	0.500			78		863			49	10/18/99	10/18	SS-014
N909019-05			BOW6B4	0.038	0.500			72		863			49	10/18/99	10/18	SS-015
N909019-06			BOW6B5	0.042	0.500			73		863			49	10/18/99	10/18	SS-016
N909019-07			BOW6B6	0.072	0.500			67		681			50	10/18/99	10/19	SS-031
N909019-08			LCS (QC ID=31856)	0.052	0.500			79		716				10/18/99	10/19	SS-057
N909019-09			BLK (QC ID=31857)	0.064	0.500			72		709				10/18/99	10/19	SS-064
N909019-11			Duplicate (N909019-03) (QC ID=31859)	0.051	0.500			71		599			51	10/18/99	10/20	SS-063
Nominal values and limits from method				1.0	0.500			20-105		10	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test	PU
Matrix	SOLID
SDG	7191
Contact	Kevin C. Johnson

LAB METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0510

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.050	±	0.021
FOR 10 SAMPLES	YIELD	74	±	10

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test	TH Matrix SOLID
SDG	7191
Contact	Kevin C. Johnson

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-137							
N909019-01			7191-001	BOW6B7	0.205 J	0.241 J	0.204 J
N909019-02			7191-002	BOW6B8	0.477 J	0.388 J	0.366 J
N909019-03			7191-003	BOW6B2	0.509 J	0.551 J	0.430 J
N909019-04			7191-004	BOW6B3	0.240 J	U	0.166 J
N909019-05			7191-005	BOW6B4	0.168 J	0.189 J	0.238 J
N909019-06			7191-006	BOW6B5	U	0.500 J	0.174 J
N909019-07			7191-007	BOW6B6	0.315 J	0.349 J	0.233 J
N909019-08			7191-008	LCS (QC ID=31856)		ok	
N909019-09			7191-009	BLK (QC ID=31857)	U	U	U
N909019-11			7191-011	Duplicate (N909019-03)	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source chrctztn-200-CW-1 OU							

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-137			2σ prep error 5.0 %	Reference Lab Notebook 6893 pg.137												
N909019-01			BOW6B7	0.15	0.250			87		865			49	10/18/99	10/18	SS-033
N909019-02			BOW6B8	0.17	0.250			75		865			49	10/18/99	10/18	SS-034
N909019-03			BOW6B2	0.16	0.250			64		865			49	10/18/99	10/18	SS-035
N909019-04			BOW6B3	0.17	0.250			84		865			49	10/18/99	10/18	SS-036
N909019-05			BOW6B4	0.16	0.250			81		865			49	10/18/99	10/18	SS-038
N909019-06			BOW6B5	0.28	0.250			58		671			50	10/18/99	10/19	SS-040
N909019-07			BOW6B6	0.18	0.250			84		619			51	10/18/99	10/20	SS-033
N909019-08			LCS (QC ID=31856)	0.17	0.250			87		867				10/18/99	10/18	SS-044
N909019-09			BLK (QC ID=31857)	0.16	0.250			92		867				10/18/99	10/18	SS-045
N909019-11			Duplicate (N909019-03) (QC ID=31859)	0.16	0.250			75		868			49	10/18/99	10/18	SS-048
Nominal values and limits from method				1.0	0.250			20-105		200			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test TH	Matrix SOLID
SDG 7191	
Contact Kevin C. Johnson	

LAB METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0510	

PROCEDURES	REFERENCE	THPLATE
	EP-000	Data Entry and Document Preparation, rev 0
	EP-001	Q.C. Preparation, rev 0
	EP-003	Tracing, rev 0
	EP-008	Heavy Elements Electroplating, rev 0
	EP-070	Soil Dissolution, rev 0
	RP-901	Thorium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD	MDA	0.18	±	0.075
FOR 10 SAMPLES	YIELD	79	±	22

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test U Matrix SOLID
SDG 7191
Contact Kevin C. Johnson

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6893-137											
N909019-05			7191-005	BOW6B4	0.443 J	U	0.480 J	92	40	9	10
N909019-12			7191-012	Duplicate (N909019-05)	ok J	- U	ok J	115	45	11	10
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area Source chrctztn-200-CW-1 OU								Averages 104		10	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-137			2σ prep error 5.0 % Reference Lab Notebook 6893 pg.137													
N909019-05			BOW6B4	0.086	1.00			86		155			45	10/13/99	10/14	SS-038
N909019-12			Duplicate (N909019-05) (QC ID=32043)	0.081	1.00			87		151			46	10/13/99	10/15	SS-027
Nominal values and limits from method				1.0	1.00			30-105		150	100		180			

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

AVERAGES ± 2 SD FOR 2 SAMPLES
MDA 0.084 ± 0.007
YIELD 86 ± 1

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test	SR
Matrix	SOLID
SDG	7191
Contact	Kevin C. Johnson

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium	
Preparation batch 6893-137						
N909019-01			7191-001	BOW6B7	U	
N909019-02			7191-002	BOW6B8	U	
N909019-03			7191-003	BOW6B2	U	
N909019-04			7191-004	BOW6B3	U	
N909019-05			7191-005	BOW6B4	U	
N909019-06			7191-006	BOW6B5	U	
N909019-07			7191-007	BOW6B6	U	
N909019-08			7191-008	LCS (QC ID=31856)	ok	
N909019-09			7191-009	BLK (QC ID=31857)	U	
N909019-11			7191-011	Duplicate (N909019-03)	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source chrctztn-200-CW-1 OU						

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-137			2σ prep error 10.0 % Reference Lab Notebook 6893 pg.137													
N909019-01			BOW6B7	0.13	1.00			88		400			38	10/07/99	10/07	GRB-217
N909019-02			BOW6B8	0.17	1.00			95		400			38	10/07/99	10/07	GRB-218
N909019-03			BOW6B2	0.19	1.00			83		400			38	10/07/99	10/07	GRB-219
N909019-04			BOW6B3	0.17	1.00			90		400			38	10/07/99	10/07	GRB-220
N909019-05			BOW6B4	0.19	1.00			87		400			38	10/07/99	10/07	GRB-221
N909019-06			BOW6B5	0.19	1.00			83		400			38	10/07/99	10/07	GRB-222
N909019-07			BOW6B6	0.19	1.00			89		400			38	10/07/99	10/07	GRB-223
N909019-08			LCS (QC ID=31856)	0.50	1.00			80		400				10/07/99	10/07	GRB-224
N909019-09			BLK (QC ID=31857)	0.39	1.00			81		200				10/07/99	10/07	GRB-214
N909019-11			Duplicate (N909019-03) (QC ID=31859)	0.15	1.00			85		200			38	10/07/99	10/07	GRB-221
Nominal values and limits from method				1.0	1.00					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test SR	Matrix SOLID
SDG 7191	
Contact Kevin C. Johnson	

LAB METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0510	

PROCEDURES	REFERENCE	SRTOTAL
	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD	MDA	0.23	±	0.24
FOR 10 SAMPLES	YIELD	86	±	9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test	TC
Matrix	SOLID
SDG	7191
Contact	Kevin C. Johnson

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99	
Preparation batch 6893-125						
N909019-01			7191-001	BOW6B7	U	
N909019-02			7191-002	BOW6B8	U	
N909019-08			7191-008	LCS (QC ID=31856)	ok	
N909019-09			7191-009	BLK (QC ID=31857)	U	
N909019-10			7191-010	Duplicate (N909019-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	

200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-125			2σ prep error 10.0 % Reference Lab Notebook 6893 pg.125													
N909019-01			BOW6B7	0.48	1.00			72		101			43	10/05/99	10/12	GRB-218
N909019-02			BOW6B8	0.46	1.00			74		101			44	10/05/99	10/13	GRB-222
N909019-08			LCS (QC ID=31856)	0.23	1.00			76		400				10/05/99	10/11	GRB-229
N909019-09			BLK (QC ID=31857)	0.30	1.00			55		400				10/05/99	10/11	GRB-230
N909019-10			Duplicate (N909019-01) (QC ID=31858)	0.40	1.00			67		200			43	10/05/99	10/12	GRB-225
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	TC99TRLSC
	EP-060	Soil Preparation, rev 0
	EP-020	Sample Leach For Technetium-99, rev 0
	EP-540	Technetium-99 Purification, rev 0

AVERAGES ± 2 SD				
FOR 5 SAMPLES	MDA	0.37	±	0.21
	YIELD	69	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test GAM Matrix SOLID
SDG 7191
Contact Kevin C. Johnson

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
Preparation batch 6893-137								
N909019-01			7191-001	BOW6B7	U		U	
N909019-02			7191-002	BOW6B8	U		U	
N909019-03			7191-003	BOW6B2	U		U	
N909019-04			7191-004	BOW6B3	U		U	
N909019-05			7191-005	BOW6B4	U		U	
N909019-06			7191-006	BOW6B5	U		U	
N909019-07			7191-007	BOW6B6	U		U	
N909019-08			7191-008	LCS (QC ID=31856)	ok		ok	
N909019-09			7191-009	BLK (QC ID=31857)	U		U	
N909019-11			7191-011	Duplicate (N909019-03)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source chrctztn-200-CW-1 OU								

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-137			2σ prep error 15.0 % Reference Lab Notebook 6893 pg.137													
N909019-01			BOW6B7	0.089	797					206			52	09/22/99	10/21	02,03,00
N909019-02			BOW6B8	0.048	811					206			52	09/22/99	10/21	02,04,00
N909019-03			BOW6B2	0.092	741					203			50	09/22/99	10/19	MB,05,00
N909019-04			BOW6B3	0.071	868					206			52	09/22/99	10/21	MB,05,00
N909019-05			BOW6B4	0.087	829					179			43	09/22/99	10/12	02,03,00
N909019-06			BOW6B5	0.051	855					179			43	09/22/99	10/12	02,04,00
N909019-07			BOW6B6	0.083	756					207			52	09/22/99	10/21	02,03,00
N909019-08			LCS (QC ID=31856)	0.010	700					323				09/22/99	10/12	MB,08,00
N909019-09			BLK (QC ID=31857)	0.023	700					180				09/22/99	10/12	MB,08,00
N909019-11			Duplicate (N909019-03) (QC ID=31859)	0.086	741					249			44	09/22/99	10/13	02,03,00
Nominal values and limits from method				0.050	700					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test GAM	Matrix SOLID
SDG 7191	
Contact Kevin C. Johnson	

LAB METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0510	

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

AVERAGES ± 2 SD	MDA 0.064	± 0.059
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test U T Matrix SOLID
SDG 7191
Contact Kevin C. Johnson

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Uranium
Preparation batch 6893-137					
N909019-01			7191-001	BOW6B7	0.510 J
N909019-02			7191-002	BOW6B8	0.629 J
N909019-03			7191-003	BOW6B2	0.563 J
N909019-04			7191-004	BOW6B3	0.418 J
N909019-05			7191-005	BOW6B4	1.24
N909019-06			7191-006	BOW6B5	0.430 J
N909019-07			7191-007	BOW6B6	0.481 J
N909019-08			7191-008	LCS (QC ID=31856)	ok
N909019-09			7191-009	BLK (QC ID=31857)	U
N909019-11			7191-011	Duplicate (N909019-03)	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0

200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-137			2σ prep error 9.0 % Reference Lab Notebook 6893 pg.137													
N909019-01			BOW6B7	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-02			BOW6B8	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-03			BOW6B2	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-04			BOW6B3	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-05			BOW6B4	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-06			BOW6B5	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-07			BOW6B6	0.007	0.0500								50	10/06/99	10/19	KPA-001
N909019-08			LCS (QC ID=31856)	0.073	0.0500									10/06/99	10/19	KPA-001
N909019-09			BLK (QC ID=31857)	0.007	0.0500									10/06/99	10/19	KPA-001
N909019-11			Duplicate (N909019-03) (QC ID=31859)	0.007	0.0500								50	10/06/99	10/19	KPA-001
Nominal values and limits from method				1.0	0.0550								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test U T Matrix SOLID	
SDG 7191	
Contact Kevin C. Johnson	

LAB METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0510	

PROCEDURES	REFERENCE	UKPA
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1
	EP-928	Total Uranium by Kinetic Phosphorimetry, rev 0

AVERAGES ± 2 SD	MDA 0.014	± 0.042
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test H	Matrix SOLID
SDG 7191	
Contact Kevin C. Johnson	

LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0510	

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 6893-130						
N908172-09			7189-009	LCS (QC ID=31846)	ok	J
N908172-10			7189-010	BLK (QC ID=31847)	U	
N909019-01			7191-001	BOW6B7	U	
N909019-02			7191-002	BOW6B8	U	
N909019-10			7191-010	Duplicate (N909019-01)	-	U

Nominal values and limits from method RDLs (pCi/g) 400

200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-130			2σ prep error 10.0 % Reference Lab Notebook 6893 pg.130													
N908172-09			LCS (QC ID=31846)	0.071	20.4			100		120				10/02/99	10/04	LSC-007
N908172-10			BLK (QC ID=31847)	0.070	20.4			100		120				10/02/99	10/04	LSC-007
N909019-01			BOW6B7	0.070	20.3			100		120			36	10/02/99	10/05	LSC-007
N909019-02			BOW6B8	0.070	20.6			100		120			36	10/02/99	10/05	LSC-007
N909019-10			Duplicate (N909019-01) (QC ID=31858)	0.071	20.4			100		120			36	10/02/99	10/05	LSC-007
Nominal values and limits from method				400	20.4					25			180			

PROCEDURES	REFERENCE	EPA906.0
	EP-060	Soil Preparation, rev 0
	EP-211	Tritium in Solid Samples by Azeotropic Distillation, rev 0

AVERAGES ± 2 SD	MDA	0.070	± 0.001
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

Test NI L Matrix SOLID
SDG 7191
Contact Kevin C. Johnson

LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63	
Preparation batch 6893-125						
N909019-01			7191-001	BOW6B7	U	
N909019-02			7191-002	BOW6B8	U	
N909019-08			7191-008	LCS (QC ID=31856)	ok	
N909019-09			7191-009	BLK (QC ID=31857)	U	
N909019-10			7191-010	Duplicate (N909019-01)	-	U

Nominal values and limits from method RDLs (pCi/g) 30
200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 6893-125			2σ prep error 10.0 % Reference Lab Notebook 6893 pg.125													
N909019-01			BOW6B7	3.4	0.500			66		100			38	10/06/99	10/07	LSC-004
N909019-02			BOW6B8	4.9	0.500			47		100			38	10/06/99	10/07	LSC-004
N909019-08			LCS (QC ID=31856)	2.5	0.500			89		100				10/06/99	10/07	LSC-004
N909019-09			BLK (QC ID=31857)	2.6	0.500			88		100				10/06/99	10/07	LSC-004
N909019-10			Duplicate (N909019-01) (QC ID=31858)	3.0	0.500			75		100			38	10/06/99	10/07	LSC-004
Nominal values and limits from method				30	0.500					10			180			

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD MDA 3.3 ± 1.9
FOR 5 SAMPLES YIELD 73 ± 35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0510

SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/22/99

SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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Protocol Hanford
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SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

Lab id TMANC
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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

SDG 7191
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
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DATA SHEET

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/22/99

SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Report date 10/22/99

SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/22/99

DUPLICATE

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

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

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

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

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

SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id TMANC
Protocol Hanford
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MATRIX SPIKE

for the recovery.

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

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

SDG 7191
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

Lab id TMANC
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METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

SDG 7191
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0510

METHOD SUMMARY

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/22/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs	SAF No.: B99-078	SDC HOS10
Ice Chest No.: ERC 96-014	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-30-99	Offsite Property No.: A99 0237	Bill of Lading/Air Bill No.: 4235 7952 8874	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
B0W6B2	Soil	8-30-99	0745	X						X	3.4'		
BOW6B3	Soil	8-30-99	0800	X						X	5.5'	6.5'	
BOW6B4	Soil	8-30-99	0812	X						X	8'	9'	
BOW6B5	Soil	8-30-99	0831	X						X	10.5'	11.5'	
BOW6B6	Soil	8-30-99	0848	X						X	14'	15'	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-30-99/1130	Ref 1B	8-30-99/1130
Ref 1B	8-30-99/1500	C Price	9-30/99 1500
C Price	9-31-99 1300	FEDEX	8-31-99 1300
FedEx	9-1-99 10:00	TNV M. Goldenberg	9-1-99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Superfrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Bow 5L8 to Ship

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-94	Page 1 of 1

Collector Bowers/Porter/Nielson	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N SDG HOS 10	Data Turnaround 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-5 >15' bgs		SAF No. B99-078		
Ice Chest No. ERC 96-014	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/~~REORA~~ 8-30-99	Offsite Property No. A99 0237		Bill of Lading/Air Bill No. 4235 7952 8874		
			COA B20CW1 671C		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
✓ B0W6B7	Soil	8/30/99	09:04	X	X	X	X				—		X 18-19
✓ B0W6B8	Soil	8/30/99	09:25	X	X	X	X						X 20-21
												DJB 8-30-99	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-30-99/1130	Received By B of B	Date/Time 8-30-99/1130
Relinquished By RJF IB	Date/Time 8/30/99 1400	Received By C Gric	Date/Time 8/30/99 1400
Relinquished By C Gric	Date/Time 8/30/99 1400	Received By FEDEX	Date/Time 8/31/99 1400
Relinquished By FedEx	Date/Time 9-1-99 10:00	Received By TNV M. Goldenberg 10:00	Date/Time 9-1-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241} Strontium-89,90 – Total Sr Total Uranium {Uranium} Isotopic Plutonium Isotopic Thorium {Thorium-232} Americium-241

use BOWSL8 to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-1-99 10:00

CoC No. B99-078-89, 94

Container I.D. No. ERC 96-014 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [ ]
6. Number of samples in shipping container: 7
7. Number of containers per sample: _____ (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 M. Goldenberg Date: 9-1-99 Time: 10:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L951
SDG/SAF #: H0510/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-01-99

SEMIVOLATILE

Seven (7) soil samples were collected on 08-30-99.

The samples and their associated QC samples were extracted on 09-08-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-24,25-99.

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

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

2. The required holding times for extraction and analysis were met.

3. Non-target compounds were detected in the samples.

4. These samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.

5. All surrogate recoveries were within EPA QC limits.

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-13-99
Date

som\gorup\data\bna\tnu09951.doc

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

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 09/30/99 16:08

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W6B2		B0W6B2		B0W6B2		B0W6B3		B0W6B4		B0W6B5	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	86	%	75	%	77	%	75	%	77	%	85	%
	2-Fluorobiphenyl	83	%	74	%	79	%	74	%	78	%	86	%
	Terphenyl-d14	90	%	78	%	79	%	78	%	78	%	91	%
	Phenol-d5	77	%	64	%	67	%	64	%	66	%	74	%
	2-Fluorophenol	75	%	65	%	67	%	63	%	65	%	72	%
	2,4,6-Tribromophenol	69	%	65	%	62	%	54	%	54	%	56	%
Phenol		360	U	65	%	64	%	340	U	350	U	340	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	340	U	350	U	340	U
2-Chlorophenol		360	U	67	%	66	%	340	U	350	U	340	U
1,3-Dichlorobenzene		360	U	360	U	360	U	340	U	350	U	340	U
1,4-Dichlorobenzene		360	U	74	%	74	%	340	U	350	U	340	U
1,2-Dichlorobenzene		360	U	360	U	360	U	340	U	350	U	340	U
2-Methylphenol*		360	U	360	U	360	U	340	U	350	U	340	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	340	U	350	U	340	U
4-Methylphenol		360	U	360	U	360	U	340	U	350	U	340	U
N-Nitroso-di-n-propylamine		360	U	84	%	85	%	340	U	350	U	340	U
Hexachloroethane		360	U	360	U	360	U	340	U	350	U	340	U
Nitrobenzene		360	U	360	U	360	U	340	U	350	U	340	U
Isophorone		360	U	360	U	360	U	340	U	350	U	340	U
2-Nitrophenol		360	U	360	U	360	U	340	U	350	U	340	U
2,4-Dimethylphenol		360	U	360	U	360	U	340	U	350	U	340	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	340	U	350	U	340	U
2,4-Dichlorophenol		360	U	360	U	360	U	340	U	350	U	340	U
1,2,4-Trichlorobenzene		360	U	76	%	77	%	340	U	350	U	340	U
Naphthalene		360	U	360	U	360	U	340	U	350	U	340	U
4-Chloroaniline		360	U	360	U	360	U	340	U	350	U	340	U
Hexachlorobutadiene		360	U	360	U	360	U	340	U	350	U	340	U
4-Chloro-3-methylphenol		360	U	64	%	60	%	340	U	350	U	340	U
2-Methylnaphthalene		360	U	360	U	360	U	340	U	350	U	340	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	340	U	350	U	340	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	340	U	350	U	340	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	860	U	860	U	860	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9909L951 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0W6B2		B0W6B2		B0W6B2		B0W6B3		B0W6B4		B0W6B5	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	340	U	350	U	340	U
2-Nitroaniline	900	U	900	U	900	U	860	U	860	U	860	U
Dimethylphthalate	360	U	360	U	360	U	340	U	350	U	340	U
Acenaphthylene	360	U	360	U	360	U	340	U	350	U	340	U
2,6-Dinitrotoluene	360	U	360	U	360	U	340	U	350	U	340	U
3-Nitroaniline	900	U	900	U	900	U	860	U	860	U	860	U
Acenaphthene	360	U	80	%	80	%	340	U	350	U	340	U
2,4-Dinitrophenol	900	U	900	U	900	U	860	U	860	U	860	U
4-Nitrophenol	900	U	53	%	45	%	860	U	860	U	860	U
Dibenzofuran	360	U	360	U	360	U	340	U	350	U	340	U
2,4-Dinitrotoluene	360	U	77	%	74	%	340	U	350	U	340	U
Diethylphthalate	360	U	360	U	360	U	340	U	350	U	340	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	340	U	350	U	340	U
Fluorene	360	U	360	U	360	U	340	U	350	U	340	U
4-Nitroaniline	900	U	900	U	900	U	860	U	860	U	860	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	860	U	860	U	860	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	340	U	350	U	340	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	340	U	350	U	340	U
Hexachlorobenzene	360	U	360	U	360	U	340	U	350	U	340	U
Pentachlorophenol	900	U	63	%	58	%	860	U	860	U	860	U
Phenanthrene	360	U	360	U	360	U	340	U	350	U	340	U
Anthracene	360	U	360	U	360	U	340	U	350	U	340	U
Carbazole	360	U	360	U	360	U	340	U	350	U	340	U
Di-n-butylphthalate	360	U	20	J	360	U	340	U	21	J	340	U
Fluoranthene	360	U	360	U	360	U	340	U	350	U	340	U
Pyrene	360	U	81	%	82	%	340	U	350	U	340	U
Butylbenzylphthalate	360	U	360	U	360	U	340	U	350	U	340	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	340	U	350	U	340	U
Benzo(a)anthracene	360	U	360	U	360	U	340	U	350	U	340	U
Chrysene	360	U	360	U	360	U	340	U	350	U	340	U
bis(2-Ethylhexyl)phthalate	360	U	26	J	360	U	340	U	350	U	340	U
Di-n-octyl phthalate	360	U	360	U	360	U	340	U	350	U	340	U
Benzo(b)fluoranthene	360	U	360	U	360	U	340	U	350	U	340	U
Benzo(k)fluoranthene	360	U	360	U	360	U	340	U	350	U	340	U
Benzo(a)pyrene	360	U	360	U	360	U	340	U	350	U	340	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	340	U	350	U	340	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	340	U	350	U	340	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	340	U	350	U	340	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 09/30/99 16:08

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W6B6		B0W6B7		B0W6B8		SBLKCM		SBLKCM BS	
Sample Information	RFW#:	005		006		007		99LE1098-MB1		99LE1098-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	81	%	75	%	83	%	89	%	86	%
	2-Fluorobiphenyl	77	%	74	%	80	%	89	%	84	%
	Terphenyl-d14	81	%	75	%	88	%	90	%	86	%
	Phenol-d5	68	%	65	%	70	%	75	%	74	%
	2-Fluorophenol	68	%	64	%	67	%	75	%	72	%
	2,4,6-Tribromophenol	56	%	50	%	51	%	64	%	71	%
Phenol		350	U	360	U	350	U	330	U	69	%
bis(2-Chloroethyl)ether		350	U	360	U	350	U	330	U	330	U
2-Chlorophenol		350	U	360	U	350	U	330	U	71	%
1,3-Dichlorobenzene		350	U	360	U	350	U	330	U	330	U
1,4-Dichlorobenzene		350	U	360	U	350	U	330	U	81	%
1,2-Dichlorobenzene		350	U	360	U	350	U	330	U	330	U
2-Methylphenol		350	U	360	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	360	U	350	U	330	U	330	U
4-Methylphenol		350	U	360	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		350	U	360	U	350	U	330	U	90	%
Hexachloroethane		350	U	360	U	350	U	330	U	330	U
Nitrobenzene		350	U	360	U	350	U	330	U	330	U
Isophorone		350	U	360	U	350	U	330	U	330	U
2-Nitrophenol		350	U	360	U	350	U	330	U	330	U
2,4-Dimethylphenol		350	U	360	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	360	U	350	U	330	U	330	U
2,4-Dichlorophenol		350	U	360	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	360	U	350	U	330	U	83	%
Naphthalene		350	U	360	U	350	U	330	U	330	U
4-Chloroaniline		350	U	360	U	350	U	330	U	330	U
Hexachlorobutadiene		350	U	360	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	360	U	350	U	330	U	67	%
2-Methylnaphthalene		350	U	360	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	360	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	360	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		880	U	900	U	860	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W6B6		B0W6B7		B0W6B8		SBLKCM		SBLKCM BS	
RFW#:	005		006		007		99LE1098-MB1		99LE1098-MB1	
2-Chloronaphthalene	350	U	360	U	350	U	330	U	330	U
2-Nitroaniline	880	U	900	U	860	U	840	U	840	U
Dimethylphthalate	350	U	360	U	350	U	330	U	330	U
Acenaphthylene	350	U	360	U	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	360	U	350	U	330	U	330	U
3-Nitroaniline	880	U	900	U	860	U	840	U	840	U
Acenaphthene	350	U	360	U	350	U	330	U	84	%
2,4-Dinitrophenol	880	U	900	U	860	U	840	U	840	U
4-Nitrophenol	880	U	900	U	860	U	840	U	55	%
Dibenzofuran	350	U	360	U	350	U	330	U	330	U
2,4-Dinitrotoluene	350	U	360	U	350	U	330	U	81	%
Diethylphthalate	350	U	360	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	360	U	350	U	330	U	330	U
Fluorene	350	U	360	U	350	U	330	U	330	U
4-Nitroaniline	880	U	900	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	880	U	900	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	360	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	360	U	350	U	330	U	330	U
Hexachlorobenzene	350	U	360	U	350	U	330	U	330	U
Pentachlorophenol	880	U	900	U	860	U	840	U	69	%
Phenanthrene	350	U	360	U	350	U	330	U	330	U
Anthracene	350	U	360	U	350	U	330	U	330	U
Carbazole	350	U	360	U	350	U	330	U	330	U
Di-n-butylphthalate	22	J	360	U	350	U	330	U	330	U
Fluoranthene	350	U	360	U	350	U	330	U	330	U
Pyrene	350	U	360	U	350	U	330	U	83	%
Butylbenzylphthalate	350	U	360	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	360	U	350	U	330	U	330	U
Benzo(a)anthracene	350	U	360	U	350	U	330	U	330	U
Chrysene	350	U	360	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	360	U	350	U	330	U	330	U
Di-n-octyl phthalate	350	U	360	U	350	U	330	U	330	U
Benzo(b)fluoranthene	350	U	360	U	350	U	330	U	330	U
Benzo(k)fluoranthene	350	U	360	U	350	U	330	U	330	U
Benzo(a)pyrene	350	U	360	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	360	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	360	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	360	U	350	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092415

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 7 decanted: (Y/N) __ Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	10.01	70	JA
2.	ADIPATE	23.38	200	J
3.	ADIPATE	23.42	1000	J
4.	ADIPATE	23.46	2000	J
5.	ADIPATE	23.82	4000	J
6.	ADIPATE	24.00	70	J
7.	ADIPATE	24.18	3000	J
8.	ADIPATE	24.42	100	J
9.	ADIPATE	24.47	500	J
10.	ADIPATE	24.59	200	J
11.	ADIPATE	24.64	600	J
12.	ADIPATE	24.73	800	J
13.	ADIPATE	24.78	2000	J
14.	ADIPATE	24.89	400	J
15.	ADIPATE	25.06	600	J
16.	ADIPATE	25.22	2000	J
17.	ADIPATE	25.30	2000	J
18.	ADIPATE	25.78	1000	J
19.	ADIPATE	26.07	90	J
20.	ADIPATE	26.49	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092508

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 09/08/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/25/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	25.33	300	J

FORM 1 SV-TIC RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092509

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	23.13	80	J
2.	UNKNOWN	25.32	300	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092510

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	9.23	70	JA
2.	ALKANE	23.13	90	J
3.	UNKNOWN	25.35	70	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092511

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	23.13	100	J
2.	UNKNOWN	25.34	90	J

FORM 1 SV-TIC RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092512

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 7 decanted: (Y/N) __ Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

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.				

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W6B8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092513

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: 4 decanted: (Y/N)__ Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	9.23	100	J
2.	UNKNOWN	25.33	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCM

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1098-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092404

Level: (low/med) LOW Date Received: 09/08/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/08/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/24/99

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 - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2	001	S	99LE1098	08/30/99	09/08/99	09/24/99
B0W6B2	001 MS	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B2	001 MSD	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B3	002	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B4	003	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B5	004	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B6	005	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B7	006	S	99LE1098	08/30/99	09/08/99	09/25/99
B0W6B8	007	S	99LE1098	08/30/99	09/08/99	09/25/99

LAB QC:

SBLKCM	MB1	S	99LE1098	N/A	09/08/99	09/24/99
SBLKCM	MB1 BS	S	99LE1098	N/A	09/08/99	09/24/99

RECRA LabNet Use Only
99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078
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: 9/1/99 Date Due: 10/1/99
Account #:

Refrigerator #		1	6-1						6		6	6					
#/Type Container	Liquid																
	Solid	1g	1g-1						1g		1g	1g					
Volume	Liquid																
	Solid	250	500-1						500		250	4oz					
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
RECRA LabNet Use Only		0024H	OGCSC	0025H	ADRO	OPCB			Met①		1PH	Ang①					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	OGCSC	0025H	ADRO	OPCB	Met①		1PH	Ang①
001	BØW6B3 2			S	8/30/99	0745	✓	✓	✓	✓		✓		✓	✓
002	3					0800									
003	4					0812									
004	5					0831									
005	6					0848									
006	7					0904									
007	8					0925									

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRC

Special Instructions:

Run matrix QC
Sof# B99-078

COMPOSITE WASTE

OGCSC = 1-propanol + ethanol

DATE/REVISIONS:

9/8/99 - 1N3N2 added to Inorg① List.

1. Sample 001 (1000ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, ICNTU, IN3N2

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. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795288 63-4.3' 4235795288 52

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9/1/99	0930

Relinquished by	Received by	Date	Time
Original	Rewritten		

9909L951

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC96-066 / ERC96-063	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA 8-30-99	Offsite Property No.: A990236		Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B8)
			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time									
001	B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3-4'	
002	BOW6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5-6.5'	
003	BOW6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'	
004	BOW6B5	Soil	8-30-99	0831		X	X	X	X	X		10.5'-11.5'	
005	BOW6B6	Soil	8-30-99	0848		X	X	X	X	X		14'	15'

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	8-30-99/1130	Received By: Ref JB	8-30-99/1130
Relinquished By: Ref JB		8-30-99 1530	Received By: C Nile	8/30/99 1530
Relinquished By: C Nile		8/31/99 1300	Received By: FEDEX	8/31/99 1300
Relinquished By: Fed Ex		9-1-99/0930	Received By: D Smith	9-1-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Bow 528 to ship

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

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

4235 7952 8863 -4.3° 4235 7952 8852 -5.5°

RECRA ENVIRONMENTAL INC.
Chemical and Environmental Measurement Information

DEC 1999 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9909L951
SDG/SAF#: H0510/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 09-01-99

PCB

The set of samples consisted of seven (7) soil samples collected on 08-30-99.

The samples and their associated QC samples were extracted on 09-07-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-25-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. One (1) of twenty-two (22) surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

pef\r:\group\data\pest\09L-951.pcb

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

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 09/29/99 15:14

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

	Cust ID:	B0W6B2	B0W6B2	B0W6B2	B0W6B3	B0W6B4	B0W6B5
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	62 %	95 %	120 * %	88 %	98 %	85 %
	Decachlorobiphenyl	68 %	92 %	112 %	88 %	90 %	89 %
Aroclor-1016		36 U	36 U	36 U	34 U	35 U	34 U
Aroclor-1221		72 U	72 U	72 U	69 U	69 U	69 U
Aroclor-1232		36 U	36 U	36 U	34 U	35 U	34 U
Aroclor-1242		36 U	36 U	36 U	34 U	35 U	34 U
Aroclor-1248		36 U	36 U	36 U	34 U	35 U	34 U
Aroclor-1254		36 U	61 %	69 %	34 U	35 U	34 U
Aroclor-1260		36 U	36 U	36 U	34 U	35 U	34 U

	Cust ID:	B0W6B6	B0W6B7	B0W6B8	PBLKUJ	PBLKUJ BS
Sample Information	RFW#:	005	006	007	99LE1088-MB1	99LE1088-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	55 %	88 %	108 %	115 %	105 %
	Decachlorobiphenyl	59 %	87 %	107 %	107 %	98 %
Aroclor-1016		35 U	36 U	35 U	33 U	33 U
Aroclor-1221		71 U	71 U	69 U	67 U	67 U
Aroclor-1232		35 U	36 U	35 U	33 U	33 U
Aroclor-1242		35 U	36 U	35 U	33 U	33 U
Aroclor-1248		35 U	36 U	35 U	33 U	33 U
Aroclor-1254		35 U	36 U	35 U	33 U	65 %
Aroclor-1260		35 U	36 U	35 U	33 U	33 U

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

JW 09-30-99

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2	001	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B2	001 MS	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B2	001 MSD	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B3	002	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B4	003	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B5	004	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B6	005	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B7	006	S	99LE1088	08/30/99	09/07/99	09/25/99
B0W6B8	007	S	99LE1088	08/30/99	09/07/99	09/25/99

LAB QC:

PBLKUJ	MB1	S	99LE1088	N/A	09/07/99	09/25/99
PBLKUJ	MB1 BS	S	99LE1088	N/A	09/07/99	09/25/99

gw 9-30-99

RECRA LabNet Use Only
99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078
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: 9/1/99 Date Due: 10/1/99
Account #:

Refrigerator #		1	6-1						6		6	6				
#/Type Container	Liquid															
	Solid	1g	1g-1						1g		1g	1g				
Volume	Liquid															
	Solid	250	500-1						500		250	4oz				
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
RECRA LabNet Use Only		0024H OGCSC	0025H ODRO	0026B					Metal		1PH	Ang				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H OGCSC	0025H ODRO	0026B			Metal		1PH	Ang
001	BØW6B3 2			S	8/30/99	0745	✓	✓	✓			✓		✓	✓
002	3					0800									
003	4					0812									
004	5					0831									
005	6					0848									
006	7					0904									
007	8					0925									

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRG

Special Instructions:

Run matrix QC
Saf # B99-078

COMPOSITE WASTE

9/8/99 - 1N3N2 added to Inorg① list.

OGCSC = 1-propanol + ethanol

DATE/REVISIONS:

1. Sample #001 (1000ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, KNTU, IN3N2

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. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: *4235795288 63-4.3' 4235795288 52

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9/1/99	0930

Relinquished by	Received by	Date	Time
Original			
	Rewritten		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC96-066 / 96-063	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-30-99	Offsite Property No.: A990236	Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4), 8863 (6B5-6B8)	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time									
01	B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3-4'	
02	BOW6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5-6.5'	
03	BOW6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'	
04	BOW6B5	Soil	8-30-99	0831		X	X	X	X	X		10.5'-11.5'	
05	BOW6B6	Soil	8-30-99	0848		X	X	X	X	X		14'	15'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-30-99/1130	Received By: Ref IB	Date/Time: 8-30-99/1130
Relinquished By: Ref IB	Date/Time: 8-30-99 1530	Received By: C Nielson	Date/Time: 8/30/99 1530
Relinquished By: C Nielson	Date/Time: 8/31/99 1300	Received By: FEDEX	Date/Time: 8/31/99 1300
Relinquished By: Fed Ex	Date/Time: 9-1-99/0930	Received By: D Smith	Date/Time: 9-1-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Box 528 to Ship

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

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

4235 7952 8863 -4.3°

4235 7952 8852 -5.5°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-94	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 >15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96-066 / ERC 96-063	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA D 78 8-30-99	Offsite Property No.: A99 02316	Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B8)	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions
Sample No.	Matrix * / Sample Date / Sample Time										
B0W6B7	Soil / 8/30/99 / 09:04					X	X	X	X	X	19'-19'
B0W6B8	Soil / 8/30/99 / 09:25					X	X	X	X	X	20-21'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / [signature]	Date/Time: 8-30-99/1130	Received By: Bob 10	Date/Time: 8-30-99/1130
Relinquished By: REF 1B	Date/Time: 8/30/99 1300	Received By: C Grile	Date/Time: 1300/8-30-99
Relinquished By: C Grile	Date/Time: 8/31/99 1400	Received By: GAEDEX	Date/Time: 8/31/99 1400
Relinquished By: Geo Ex	Date/Time: 9.1.99/0930	Received By: D Smith	Date/Time: 9.1.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use BOWSLB to strip

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L951
SDG/SAF#: H0510/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 09-01-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 08-27-99.

The samples and their associated QC samples were prepared on 09-10-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-17,18-99. The analysis met the intent of method WTPH-D.

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

2. All required holding times for extraction and analysis were met.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. All surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

R:\SHARE\LC\GCSCAN\09-951d.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 7 pages.

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

GLOSSARY OF DIESEL DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 09/22/99 08:40

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0W6B2	B0W6B2	B0W6B2	B0W6B3	B0W6B4	B0W6B5
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	57 %	69 %	65 %	88 %	72 %	61 %
Diesel Range Organics		4.2 U	75 %	66 %	4.0 U	4.1 U	4.1 U

	Cust ID:	B0W6B6	B0W6B7	B0W6B8	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LE1105-MB1	99LE1105-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	49 %	47 %	46 %	64 %	74 %
Diesel Range Organics		4.2 U	4.3 U	4.1 U	4.0 U	73 %

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

9/22/99

9/24/99

Recra LabNet - Lionville Laboratory
DRO ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2	001	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B2	001 MS	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B2	001 MSD	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B3	002	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B4	003	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B5	004	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B6	005	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B7	006	S	99LE1105	08/30/99	09/10/99	09/18/99
B0W6B8	007	S	99LE1105	08/30/99	09/10/99	09/18/99

LAB QC:

BLK	MB1	S	99LE1105	N/A	09/10/99	09/17/99
BLK	MB1 BS	S	99LE1105	N/A	09/10/99	09/17/99

RECRA LabNet Use Only
99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
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: 9/1/99 Date Due: 10/1/99
Account #:

Refrigerator #		1	6-1						6		6	6				15
#/Type Container	Liquid															
	Solid	1g	1g-1						1g		1g	1g				
Volume	Liquid															
	Solid	250	500-1						500		250	UT				
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: Metal	INORG: CN						

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625H ODRO	OPCB	Metal		IPH	Ang O
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	BOW6B32			S	8/30/99	0745	✓	✓	✓	✓		✓	✓
	002	3					0800							
	003	4					0812							
	004	5					0831							
	005	6					0848							
	006	7					0904							
	007	8					0925							

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRC

Special Instructions:

Run matrix QC
Sep # B99-078

COMPOSITE WASTE

OGCSC = 1-propanol + ethanol

DATE/REVISIONS:

1. Sample #001 (1000 ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, ICNTU

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec'd Y or N

Cooler Temp 5.5 C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: *4235795288863-4.3 4235795288852

Relinquished by	Received by	Date	Time
Fed Ex	D. Ignatio	9/1/99	0930

Relinquished by	Received by	Date	Time
Original			
	Rewritten		

9904L451

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC96-064 / ERC96-063	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-30-99	Offsite Property No.: A990236	Bill of Lading/Air Bill No.: 4235 7952 8852 (682-684) 8863 (685-688)	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time									
01	B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3-4'	
02	BOW6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5-6.5'	
03	BOW6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'	
04	BOW6B5	Soil	8-30-99	0871		X	X	X	X	X		10.5'-11.5'	
05	BOW6B6	Soil	8-30-99	0848		X	X	X	X	X		14'	15'

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers	Received By: Ref 1B	8-30-99/1130
Relinquished By: Ref 1B	Received By: C Nielson	8/30/99 1530
Relinquished By: C Nielson	Received By: FEDEX	8/31/99 1300
Relinquished By: Fed Ex	Received By: D. Arnold	9.1.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Box 528 to Ship

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

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

4235 7952 8863 -4.3°

4235 7952 8852 -5.5°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-94	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 >15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-066 / ERC 96-063	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA D 78 8-30-99	Offsite Property No.: A99 02316		Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B8)
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions
06 B0W6B7	Soil	8/30/99	09:04					X	X	X	X	X	19'-19'
07 B0W6B8	Soil	8/30/99	09:25					X	X	X	X	X	20-21'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / [signature]	Date/Time: 8-30-99/1130	Received By: Bob 10	Date/Time: 8-30-99/1130
Relinquished By: REF 1B	Date/Time: 8/30/99 1300	Received By: C Julie	Date/Time: 1300/8-30-99
Relinquished By: [signature]	Date/Time: 8/31/99 1400	Received By: GAFEDEX	Date/Time: 8/31/99 1400
Relinquished By: Geo Ex	Date/Time: 9-1-99/0930	Received By: D Smith	Date/Time: 9-1-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR WAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOWSLB to ship

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9909L951
SDG/SAF#: H0510/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-01-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 08-30-99.

The samples and their associated QC samples were prepared on 09-02-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-02,03-99.

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

1. The samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The required holding time for analysis was met.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. Surrogates were not used for this analysis.

6. The blank spike recovery was within advisory control limits of 50%-150%.

7. All matrix spike recoveries were within advisory control limits of 50%-150%.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

r:\share\lc\gcscan\09-951.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 7 pages.

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 09/13/99 15:30

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W6B2	B0W6B2	B0W6B2	B0W6B3	B0W6B4	B0W6B5
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.5 U	76 %	68 %	3.7 U	4.2 U	5.0 U
Ethanol		5.5 U	5.0 U	5.0 U	3.7 U	4.2 U	5.0 U

	Cust ID:	B0W6B6	B0W6B7	B0W6B8	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LLC133-MB1	99LLC133-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		4.8 U	4.8 U	4.6 U	5.0 U	95 %
Ethanol		4.8 U	4.8 U	4.6 U	5.0 U	5.0 U

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

09/16/99

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2	001	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B2	001 MS	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B2	001 MSD	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B3	002	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B4	003	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B5	004	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B6	005	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B7	006	S	99LLC133	08/30/99	09/02/99	09/03/99
B0W6B8	007	S	99LLC133	08/30/99	09/02/99	09/03/99

LAB QC:

BLK	MB1	S	99LLC133	N/A	09/02/99	09/02/99
BLK	MB1 BS	S	99LLC133	N/A	09/02/99	09/03/99

9/13/99

RECRA LabNet Use Only

99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078

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: 9/1/99 Date Due: 10/1/99

Account #:

Refrigerator #		1	6-1						6		6	6				005
#/Type Container	Liquid															
	Solid	1g	1g-1						1g		1g	1g				
Volume	Liquid															
	Solid	250	500-1						500		250	1/4				
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA								INORG: Metal							
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	INORG: CN															

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625H ODRO	0713B				Metal		1PH	Ang①
001	BØW6B32			S	8/30/99	0745	✓	✓	✓				✓		✓	✓
002	43					0800										
003	54					0812										
004	65					0831										
005	6					0848										
006	7					0904										
007	8					0925										

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICR6

Special Instructions:

Run matrix QC

Saf# B99-078

COMPOSITE WASTE

9/8/99 - 1N3N2 added to Inorg① List.

OGCSC = 1-propanol + lothanol

DATE/REVISIONS:

1. Sample 001 (1000 ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, KNTU, IN3N2

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill #*

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec'd Y or N

Cooler Temp. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: *4235795288 63-4.3' 4235795288 52

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9/1/99	0930

Relinquished by	Received by	Date	Time
Original	Rewritten		

9909L951

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC96-066 / ERC96-063	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-30-99	Offsite Property No.: A990236	Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4), 8863 (6B5-6B6)	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
001 B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3'-4'
002 BOW6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5-6.5'
003 BOW6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'
004 BOW6B5	Soil	8-30-99	0831		X	X	X	X	X		10.5'-11.5'
005 BOW6B6	Soil	8-30-99	0848		X	X	X	X	X		14' 15'

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	8-30-99/1130	Ref JB	8-30-99/1130
Relinquished By	Ref JB	8-30-99 1530	C Julie	8/30/99 1530
Relinquished By	C Julie	8/31/99 1300	FEDEX	8/31/99 1300
Relinquished By	Fed Ex	9.1.99/0930	D Smith	9.1.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Box 528 to ship

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

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

4235 7952 8863 -4.3°

4235 7952 8852 -5.5°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-94	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 >15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-066 / ERC 96-063	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA D 78 8-20-99	Offsite Property No.: A990236		Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B8)
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions

	Sample No.	Matrix *	Sample Date	Sample Time										
006	B0W6B7	Soil	8/30/99	09:04					X	X	X	X	X	19'-19'
007	B0W6B8	Soil	8/30/99	09:25					X	X	X	X	X	20-21'

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-30-99/1130	Ref 10	8-30-99/1130
REF 1B	8/30/99 1300	C Grile	1300/8-30-99
C Grile	8/31/99 1400	FEDEX	8/31/99 1400
Fed Ex	9.1.99/0930	D Smith	9.1.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use BOWSLB to ship

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L951
SDG/SAF #: H0510/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-01-99

GC/MS VOLATILE soil OSY 10/14/99

Seven (7) water samples were collected on 08-30-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-13,18-99.

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

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

2. The required holding time for analysis was met with the exception of the matrix spike samples, which were analyzed outside of holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. A non-target compound was detected in the method blank 99LVN296-MB1.

4. Three (3) of thirty-six (36) surrogate recoveries were outside EPA QC limits. The surrogate recoveries for both samples B0W6B2 and B0W6B4 were biased slightly high; however, there were no significant target compounds were detected in the samples. There were no significant impact on the data. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

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

7. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 4x the CRQL. The method blank 99LVN296-MB1 also contained the target compound Trichlorofluoromethane at a level less than the CRQL.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-13-99
Date

som\group\data\ voa\tnu09951.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 20 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.

mmz\10-94\gloss.voa

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99VT140

Initiator: Michael Keppel RFW Batch: 9909L951 Parameter: 0624H VOA
Date: 9/14/99 Samples: 001; 003, MS & MSD Matrix: soil
Client: INV Hanford Method: SW846/MCAWW/CLP/ Prep Batch: _____

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① 001's 1st surrogate was slightly high. sample = 124% limit = 121%
② 003's 1st + 2nd surrogate were high. (1st) sample = 136 % limit = 121%; (2nd) sample = 128% limit = 117%
③ The MS + MSD will be run out of hold. Samples are clean

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:
①+② Report and narrate
③ Analyze out of hold; Report + Narrate

4. Project Manager Instructions...signature/date: Michael S. Johnson 9/14/99

✓ 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: Beth Quiroz 10/4/99 Other Explanation:

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

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 10/06/99 09:27

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W6B2	B0W6B3	B0W6B3	B0W6B3	B0W6B4	B0W6B5
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	0.980	0.980	0.962	1.02	0.980
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	117 %	108 %	109 %	100 %	128 * %	107 %
	Bromofluorobenzene	91 %	91 %	103 %	95 %	108 %	92 %
	1,2-Dichloroethane-d4	124 * %	111 %	112 %	103 %	136 * %	111 %
Chloromethane		11 U	10 U	10 U	10 U	11 U	10 U
Bromomethane		11 U	10 U	10 U	10 U	11 U	10 U
Vinyl Chloride		11 U	10 U	10 U	10 U	11 U	10 U
Chloroethane		11 U	10 U	10 U	10 U	11 U	10 U
Methylene Chloride		20 B	17 B	12 B	11 B	20 B	16 B
Acetone		3 JB	3 BJ	6 JB	4 JB	3 JB	3 JB
Carbon Disulfide		6 U	5 U	5 U	5 U	6 U	5 U
1,1-Dichloroethene		6 U	5 U	101 %	97 %	6 U	5 U
1,1-Dichloroethane		6 U	5 U	5 U	5 U	6 U	5 U
1,2-Dichloroethene (total)		6 U	5 U	5 U	5 U	6 U	5 U
Chloroform		6 U	5 U	5 U	5 U	6 U	5 U
1,2-Dichloroethane		6 U	5 U	5 U	5 U	6 U	5 U
2-Butanone		11 U	2 J	3 JB	2 JB	11 U	10 U
1,1,1-Trichloroethane		6 U	5 U	5 U	5 U	6 U	5 U
Carbon Tetrachloride		6 U	5 U	5 U	5 U	6 U	5 U
Bromodichloromethane		6 U	5 U	5 U	5 U	6 U	5 U
1,2-Dichloropropane		6 U	5 U	5 U	5 U	6 U	5 U
cis-1,3-Dichloropropene		6 U	5 U	5 U	5 U	6 U	5 U
Trichloroethene		6 U	5 U	103 %	99 %	6 U	5 U
Dibromochloromethane		6 U	5 U	5 U	5 U	6 U	5 U
1,1,2-Trichloroethane		6 U	5 U	5 U	5 U	6 U	5 U
Benzene		6 U	5 U	103 %	98 %	6 U	5 U
Trans-1,3-Dichloropropene		6 U	5 U	5 U	5 U	6 U	5 U
Bromoform		6 U	5 U	5 U	5 U	6 U	5 U
4-Methyl-2-pentanone		11 U	10 U	10 U	10 U	11 U	10 U
2-Hexanone		11 U	10 U	10 U	10 U	11 U	10 U
Tetrachloroethene		6 U	5 U	5 U	5 U	6 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U	5 U	5 U	6 U	5 U
Toluene		6 U	5 U	102 %	97 %	6 U	5 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0W6B2	B0W6B3	B0W6B3	B0W6B3	B0W6B4	B0W6B5
RFW#:	001	002	002 MS	002 MSD	003	004
Chlorobenzene	6 U	5 U	101 %	96 %	6 U	5 U
Ethylbenzene	6 U	5 U	5 U	5 U	6 U	5 U
Styrene	6 U	5 U	5 U	5 U	6 U	5 U
Xylene (total)	6 U	5 U	5 U	5 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 10/06/99 09:27

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W6B6		B0W6B7		B0W6B8		VBLKRM		VBLKPI		VBLKPI BS	
Sample Information	RFW#:	005		006		007		99LVN280-MB1		99LVN296-MB1		99LVN296-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		0.980		1.04		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	107	%	105	%	113	%	113	%	95	%	96	%
	Bromofluorobenzene	89	%	90	%	96	%	90	%	91	%	95	%
	1,2-Dichloroethane-d4	108	%	105	%	114	%	100	%	100	%	105	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	11	U	11	U	10	U	10	U	10	U
Bromomethane		10	U	11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		10	U	11	U	11	U	10	U	10	U	10	U
Chloroethane		10	U	11	U	11	U	10	U	10	U	10	U
Methylene Chloride		18	B	19	B	20	B	15		11		10	B
Acetone		3	BJ	2	BJ	4	JB	1	J	4	J	3	JB
Carbon Disulfide		5	U	6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	6	U	6	U	5	U	5	U	92	%
1,1-Dichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	6	U	5	U	5	U	5	U
Chloroform		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
2-Butanone		10	U	11	U	11	U	10	U	2	J	2	JB
1,1,1-Trichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U	5	U
Trichloroethene		5	U	6	U	6	U	5	U	5	U	101	%
Dibromochloromethane		5	U	6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Benzene		5	U	6	U	6	U	5	U	5	U	100	%
Trans-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U	5	U
Bromoform		5	U	6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	11	U	11	U	10	U	10	U	10	U
2-Hexanone		10	U	11	U	11	U	10	U	10	U	10	U
Tetrachloroethene		5	U	6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Toluene		5	U	6	U	6	U	5	U	5	U	97	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L951** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

90

Cust ID:	B0W6B6	B0W6B7	B0W6B8	VBLKRM	VBLKPI	VBLKPI BS
RFW#:	005	006	007	99LVN280-MB1	99LVN296-MB1	99LVN296-MB1
Chlorobenzene	5 U	6 U	6 U	5 U	5 U	99 %
Ethylbenzene	5 U	6 U	6 U	5 U	5 U	5 U
Styrene	5 U	6 U	6 U	5 U	5 U	5 U
Xylene (total)	5 U	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B2

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n091314

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 7 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B3

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-002

Sample wt/vol: 5.10 (g/mL) G Lab File ID: n091315

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 3 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 0

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

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

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B4

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-003

Sample wt/vol: 4.90 (g/mL) G Lab File ID: n091316

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 4 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 1.02

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B5

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-004

Sample wt/vol: 5.10 (g/mL) G Lab File ID: n091317

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 3 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B6

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-005

Sample wt/vol: 5.10 (g/mL) G Lab File ID: n091318

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 6 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B7

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-006

Sample wt/vol: 5.10 (g/mL) G Lab File ID: n091319

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 7 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 0

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

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

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1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W6B8

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L951-007

Sample wt/vol: 4.80 (g/mL) G Lab File ID: n091320

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 4 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 1.04

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKRM

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN280-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n091304

Level: (low/med) LOW Date Received: 09/13/99

% Moisture: not dec. 0 Date Analyzed: 09/13/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKPI

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN296-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n091805

Level: (low/med) LOW Date Received: 09/18/99

% Moisture: not dec. 0 Date Analyzed: 09/18/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	16.588	6	J

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2	001	S	99LVN280	08/30/99	N/A	09/13/99
B0W6B3	002	S	99LVN280	08/30/99	N/A	09/13/99
B0W6B3	002 MS	S	99LVN296	08/30/99	N/A	09/18/99
B0W6B3	002 MSD	S	99LVN296	08/30/99	N/A	09/18/99
B0W6B4	003	S	99LVN280	08/30/99	N/A	09/13/99
B0W6B5	004	S	99LVN280	08/30/99	N/A	09/13/99
B0W6B6	005	S	99LVN280	08/30/99	N/A	09/13/99
B0W6B7	006	S	99LVN280	08/30/99	N/A	09/13/99
B0W6B8	007	S	99LVN280	08/30/99	N/A	09/13/99
LAB QC:						
VBLKRM	MB1	S	99LVN280	N/A	N/A	09/13/99
VBLKPI	MB1	S	99LVN296	N/A	N/A	09/18/99
VBLKPI	MB1 BS	S	99LVN296	N/A	N/A	09/18/99

RECRA LabNet Use Only
99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078
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: 9/1/99 Date Due: 10/1/99
Account #:

Refrigerator #		1	6-1						6		6	6				
#/Type Container	Liquid															
	Solid	1g	1g-1						1g		1g	1g				
Volume	Liquid															
	Solid	250	500-1						500		250	UT				
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN						

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only: 8024H OGCSC	8025H ODRO	GPCB	Met①		1PH	Ang①
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	BØW6BB2			S	8/30/99	0745	✓	✓	✓	✓		✓	✓
	002	3					0800							
	003	4					0812							
	004	5					0831							
	005	6					0848							
	006	7					0904							
	007	8					0925							

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRC

Special Instructions:

Run matrix QC
Saf# B99-078

COMPOSITE WASTE

9/8/99 - 1N3N2 added to Inorg① list.

OGCSC = 1-propanol + ethanol

DATE/REVISIONS:

1. Sample 001 (1000ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, KNTU, IN3N2

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. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795288 63-4.3' 4235795288 52

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/1/99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

9909L951

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 10 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC96-066 / ERC96-063	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-30-99	Offsite Property No.: A990236	Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B6)	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time										
001	B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3-4'		
002	BOW6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5-6.5'		
003	BOW6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'		
004	BOW6B5	Soil	8-30-99	0831		X	X	X	X	X		10.5'-11.5'		
005	BOW6B6	Soil	8-30-99	0848		X	X	X	X	X		14'	15'	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers — Date/Time: 8-30-99/1130	Received By: Ref 1B — Date/Time: 8-30-99/1130		
Relinquished By: Ref 1B — Date/Time: 8-30-99 1530	Received By: C Nielson — Date/Time: 8/30/99 1530		
Relinquished By: C Nielson — Date/Time: 8/31/99 1300	Received By: FEDEX — Date/Time: 8/31/99 1300		
Relinquished By: Fed Ex — Date/Time: 9.1.99/0930	Received By: D Smith — Date/Time: 9.1.99/0930		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Box 528 to Ship

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

4235 7952 8863 -4.3°

4235 7952 8852 -5.5°

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L951
SDG/SAF# : B99-078/H0510

W.O.# : 10985-001-001-9999-00
Date Received: 09-01-99

REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

1. This narrative covers the analyses of 7 soil samples.

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

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

4. The cooler temperatures have been recorded on the Chain of Custody.

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

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

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 020 pages.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at the following concentration:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0W6B2	Antimony	600	93.2

12. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

mld/m09-951r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L951

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	✓6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ **Method:**_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W6B2	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	3.3	MG/KG	0.32	1.0
		Barium, Total	72.2	MG/KG	0.03	1.0
		Beryllium, Total	0.23	MG/KG	0.01	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Chromium, Total	8.5	MG/KG	0.08	1.0
		Copper, Total	16.8	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.9	MG/KG	0.12	1.0
		Lead, Total	5.6	MG/KG	0.21	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	1.3	MG/KG	0.36	1.0
		Thallium, Total	0.52 u	MG/KG	0.52	1.0
		Vanadium, Total	70.2	MG/KG	0.06	1.0
		Zinc, Total	51.7	MG/KG	0.08	1.0
-002	B0W6B3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.4	MG/KG	0.23	1.0
		Barium, Total	33.6	MG/KG	0.02	1.0
		Beryllium, Total	0.11	MG/KG	0.007	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	2.9	MG/KG	0.06	1.0
		Copper, Total	13.6	MG/KG	0.08	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.2	MG/KG	0.08	1.0
		Lead, Total	3.1	MG/KG	0.15	1.0
		Antimony, Total	0.17 u	MG/KG	0.17	1.0
		Selenium, Total	1.3	MG/KG	0.26	1.0
		Thallium, Total	0.96	MG/KG	0.37	1.0
		Vanadium, Total	63.5	MG/KG	0.04	1.0
		Zinc, Total	45.4	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W6B4	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.8	MG/KG	0.34	1.0
		Barium, Total	42.9	MG/KG	0.03	1.0
		Beryllium, Total	0.15	MG/KG	0.01	1.0
		Cadmium, Total	0.04	MG/KG	0.03	1.0
		Chromium, Total	4.1	MG/KG	0.08	1.0
		Copper, Total	15.9	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.3	MG/KG	0.12	1.0
		Lead, Total	3.0	MG/KG	0.21	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.83	MG/KG	0.38	1.0
		Thallium, Total	0.54 u	MG/KG	0.54	1.0
		Vanadium, Total	66.8	MG/KG	0.06	1.0
		Zinc, Total	48.7	MG/KG	0.08	1.0
-004	B0W6B5	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.2	MG/KG	0.30	1.0
		Barium, Total	31.5	MG/KG	0.03	1.0
		Beryllium, Total	0.1	MG/KG	0.009	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Chromium, Total	3.5	MG/KG	0.07	1.0
		Copper, Total	13.7	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.3	MG/KG	0.11	1.0
		Lead, Total	2.5	MG/KG	0.19	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.96	MG/KG	0.33	1.0
		Thallium, Total	0.51	MG/KG	0.47	1.0
		Vanadium, Total	62.9	MG/KG	0.05	1.0
		Zinc, Total	47.2	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W6B6	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	2.5	MG/KG	0.33	1.0
		Barium, Total	34.3	MG/KG	0.03	1.0
		Beryllium, Total	0.16	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	3.7	MG/KG	0.08	1.0
		Copper, Total	12.0	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.2	MG/KG	0.12	1.0
		Lead, Total	3.4	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.71	MG/KG	0.37	1.0
		Thallium, Total	0.88	MG/KG	0.52	1.0
		Vanadium, Total	51.1	MG/KG	0.06	1.0
		Zinc, Total	41.2	MG/KG	0.08	1.0
-006	B0W6B7	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	2.3	MG/KG	0.35	1.0
		Barium, Total	33.7	MG/KG	0.03	1.0
		Beryllium, Total	0.23	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	3.5	MG/KG	0.08	1.0
		Copper, Total	14.0	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.5	MG/KG	0.13	1.0
		Lead, Total	3.9	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Thallium, Total	0.56 u	MG/KG	0.56	1.0
		Vanadium, Total	41.5	MG/KG	0.06	1.0
		Zinc, Total	37.0	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W6B8	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.3	MG/KG	0.26	1.0
		Barium, Total	79.1	MG/KG	0.02	1.0
		Beryllium, Total	0.16	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	4.1	MG/KG	0.06	1.0
		Copper, Total	10.7	MG/KG	0.09	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.6	MG/KG	0.09	1.0
		Lead, Total	2.3	MG/KG	0.16	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.29 u	MG/KG	0.29	1.0
		Thallium, Total	0.41 u	MG/KG	0.41	1.0
		Vanadium, Total	33.2	MG/KG	0.05	1.0
		Zinc, Total	29.6	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0643-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.10	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.09	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0269-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W6B2	Silver, Total	3.2	0.1 u	3.6	88.9	1.0
		Arsenic, Total	149	3.3	145	101.0	1.0
		Barium, Total	195	72.2	145	84.9	1.0
		Beryllium, Total	4.0	0.23	3.6	104.6	1.0
		Cadmium, Total	3.7	0.06	3.6	101.0	1.0
		Chromium, Total	22.8	8.5	14.5	98.6	1.0
		Copper, Total	31.5	16.8	18.1	81.2	1.0
		Mercury, Total	0.18	0.02u	0.17	104.0	1.0
		Nickel, Total	46.6	11.9	36.2	95.9	1.0
		Lead, Total	41.8	5.6	36.2	100	1.0
		Antimony, Total	19.9	0.24u	36.2	55.0	1.0
		Selenium, Total	141	1.3	145	96.9	1.0
		Thallium, Total	141	0.52u	145	97.6	1.0
		Vanadium, Total	100	70.2	36.2	83.1	1.0
		Zinc, Total	84.0	51.7	36.2	89.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W6B2	Silver, Total	0.1 u	0.1 u	NC	1.0
		Arsenic, Total	3.3	3.2	3.1	1.0
		Barium, Total	72.2	70.4	2.5	1.0
		Beryllium, Total	0.23	0.39	49.0	1.0
		Cadmium, Total	0.06	0.33	135.8	1.0
		Chromium, Total	8.5	8.7	2.3	1.0
		Copper, Total	16.8	16.0	4.9	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	11.9	11.3	5.2	1.0
		Lead, Total	5.6	6.7	17.9	1.0
		Antimony, Total	0.24u	0.25u	NC	1.0
		Selenium, Total	1.3	0.71	58.4	1.0
		Thallium, Total	0.52u	0.75	~~NC~~ 200	1.0
		Vanadium, Total	70.2	68.8	2.0	1.0
		Zinc, Total	51.7	50.8	1.8	1.0

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Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0643-LC1	Silver, LCS	49.7	50.0	MG/KG	99.4
		Arsenic, LCS	974	1000	MG/KG	97.4
		Barium, LCS	497	500	MG/KG	99.4
		Beryllium, LCS	24.4	25.0	MG/KG	97.6
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	50.3	50.0	MG/KG	100.6
		Copper, LCS	124	125	MG/KG	99.5
		Nickel, LCS	197	200	MG/KG	98.4
		Lead, LCS	246	250	MG/KG	98.6
		Antimony, LCS	292	300	MG/KG	97.5
		Selenium, LCS	945	1000	MG/KG	94.5
		Thallium, LCS	1020	1000	MG/KG	101.6
		Vanadium, LCS	256	250	MG/KG	102.5
		Zinc, LCS	96.7	100	MG/KG	96.7
LCS1	99C0269-LC1	Mercury, LCS	0.98	1.0	MG/KG	98.3

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2						
SILVER, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/27/99
SILVER, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/27/99
SILVER, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
ARSENIC, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
ARSENIC, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/27/99
BARIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/27/99
BARIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
BERYLLIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
BERYLLIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/27/99
COPPER, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/27/99
COPPER, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/27/99
MERCURY, TOTAL	001	S	99C0269	08/30/99	09/12/99	09/12/99
MERCURY, TOTAL	001 REP	S	99C0269	08/30/99	09/12/99	09/12/99
MERCURY, TOTAL	001 MS	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
NICKEL, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
NICKEL, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/27/99
VANADIUM, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/27/99
VANADIUM, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	001	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	001 REP	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	001 MS	S	99L0643	08/30/99	09/22/99	09/27/99
B0W6B3						
SILVER, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/27/99
MERCURY, TOTAL	002	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	002	S	99L0643	08/30/99	09/22/99	09/27/99
B0W6B4						
SILVER, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/27/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	003	S	99L0643	08/30/99	09/22/99	09/27/99
B0W6B5						
SILVER, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/27/99
MERCURY, TOTAL	004	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	004	S	99L0643	08/30/99	09/22/99	09/27/99
B0W6B6						
SILVER, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/27/99
MERCURY, TOTAL	005	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	005	S	99L0643	08/30/99	09/22/99	09/27/99
B0W6B7						
SILVER, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/27/99
MERCURY, TOTAL	006	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
SELENIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	006	S	99L0643	08/30/99	09/22/99	09/27/99
B0W6B8						
SILVER, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/27/99
ARSENIC, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
BARIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
CADMIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
CHROMIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
COPPER, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/27/99
MERCURY, TOTAL	007	S	99C0269	08/30/99	09/12/99	09/12/99
NICKEL, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
LEAD, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
ANTIMONY, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
THALLIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/28/99
VANADIUM, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/27/99
ZINC, TOTAL	007	S	99L0643	08/30/99	09/22/99	09/27/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
SILVER, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
ARSENIC LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
ARSENIC, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
BARIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
BARIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
BERYLLIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
CADMIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
CADMIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
CHROMIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
CHROMIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
COPPER LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
COPPER, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
MERCURY LABORATORY	LC1 BS	S	99C0269	N/A	09/12/99	09/12/99
MERCURY, TOTAL	MB1	S	99C0269	N/A	09/12/99	09/12/99
NICKEL LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
NICKEL, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
LEAD LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
LEAD, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
ANTIMONY LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
ANTIMONY, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
SELENIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
SELENIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
THALLIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
THALLIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
VANADIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
VANADIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
ZINC LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
ZINC, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99

RECRA LabNet Use Only
99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab metals

Client: TNU-Hanford B99-078
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: 9/1/99 Date Due: 10/1/99
Account #:

Refrigerator #		1	6-1							6		6	6			
#/Type Container	Liquid															
	Solid	1g	1g-1							1g		1g	1g			
Volume	Liquid															
	Solid	250	500-1							500		250	1/4			
Preservatives																
ANALYSES REQUESTED →		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN					
		RECRA LabNet Use Only														
		0024H OGCSC	0025H ODRO	0026B						Met①		1PH	Ang①			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H OGCSC	0025H ODRO	0026B	Met①	1PH	Ang①
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	BØW6BB2			S	8/30/99	0745	✓	✓	✓	✓	✓	✓
	002	3					0800						
	003	4					0812						
	004	5					0831						
	005	6					0848						
	006	7					0904						
	007	8					0925						

11/3/99 SB and TL added to all metals samples per client

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRG

Special Instructions:

Run matrix QC
Saf# B99-078

COMPOSITE WASTE

9/8/99 - 1N3N2 added to Inorg① list.

OGCSC = 1-propanol + ethanol

DATE/REVISIONS:

1. Sample #001 (1000ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, ICNTU, IN3N2

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. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795288863-4.3' 4235795288852

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/1/99	0930

Relinquished by	Received by	Date	Time
Original	Rewritten		

9904L451

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs	SAF No.: B99-078	
Ice Chest No.: EQC96-066 / EQC96-063	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA 8-30-99	Offsite Property No.: A990236	Bill of Lading/Air Bill No.: 4235 7952 8852 (682-684) 8863 (685-688)	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time									
001	B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3-4'	
002	B0W6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5-6.5'	
003	B0W6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'	
004	B0W6B5	Soil	8-30-99	0831		X	X	X	X	X		10.5'-11.5'	
005	B0W6B6	Soil	8-30-99	0848		X	X	X	X	X		14'	15'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-30-99/1130	Received By: Ref IB	Date/Time: 8-30-99/1130
Relinquished By: Ref IB	Date/Time: 8-30-99 1530	Received By: C Nile	Date/Time: 8/30/99 1530
Relinquished By: C Nile	Date/Time: 8/31/99 1300	Received By: FEDEX	Date/Time: 8/31/99 1300
Relinquished By: Fed Ex	Date/Time: 9.1.99/0930	Received By: D. Smith	Date/Time: 9.1.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Box 528 to Ship

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

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

4235 7952 8863 -4.3°

4235 7952 8852 -5.5°

019

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-94	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 >15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-066 / ERC 96-063	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA D 78 8-30-99	Offsite Property No.: A99 02316		Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B8)
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions

	Sample No.	Matrix *	Sample Date	Sample Time										
006	B0W6B7	Soil	8/30/99	09:04					X	X	X	X	X	18'-19'
007	B0W6B8	Soil	8/30/99	09:25					X	X	X	X	X	20-21'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-30-99/1130	Received By: Ref 1B	Date/Time: 8-30-99/1130
Relinquished By: REF 1B	Date/Time: 8/30/99 1300	Received By: C Julie	Date/Time: 1300/8-30-99
Relinquished By: C Julie	Date/Time: 8/31/99 1400	Received By: FEDEX	Date/Time: 8/31/99 1400
Relinquished By: Fed Ex	Date/Time: 9.1.99/0930	Received By: D Smith	Date/Time: 9.1.99/0930
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOWSL8 to ship

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

DEC 1999

Recra LabNet Philadelphia
Analytical Report

Client : TNU0HANFORD B99-078
RFW# : 9909L951
SDG# : H0510
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 09-01-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 7 soil 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 with the exception of matrix quality control analyses for Total Cyanide sample B0W6B2.

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

5. The method blanks were within method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicates were within the 20% RPD control limit.

8. The replicate analyses were within the 20% RPD control limit.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-1-99
Date

njp&pef\i09-951

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.

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

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	__		✓ ILMO4.0 (e)
% Volatile Soilids	__ 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	
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)
Oxygne Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Prpearation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate Nitrite **Method:** EPA 353.2

Other: Ammonia **Method** EPA 350.3

Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate } EPA 300.0

L-WI-034/B-06/99

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.

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W6B2	% Solids	92.8		%	0.01	1.0
		Chloride by IC	1.5		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	20		MG/KG	1.3	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	2.2		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	58.5		MG/KG	5.2	4.0
		Nitrate Nitrite	4.4		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.7		SOIL PH	0.0	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-002	B0W6B3	% Solids	97.3		%	0.01	1.0
		Chloride by IC	1.3	u	MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	3.3		MG/KG	1.3	1.0
		Cyanide, Total	0.51	u	MG/KG	0.51	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	35.2		MG/KG	1.3	1.0
		Nitrate Nitrite	0.70		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.4		SOIL PH	0.0	1.0
		Sulfide	3.5		MG/KG	1.0	1.0
-003	B0W6B4	% Solids	96.1		%	0.01	1.0
		Chloride by IC	1.4		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	15		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	53.3		MG/KG	2.6	2.0
		Nitrate Nitrite	3.3		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.4		SOIL PH	0.0	1.0

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W6B4	Sulfide	4.1		MG/KG	1.0	1.0
-004	B0W6B5	% Solids	97.1		%	0.01	1.0
		Chloride by IC	1.3	u	MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	6.9		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	21.3		MG/KG	1.3	1.0
		Nitrate Nitrite	1.6		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.3		SOIL PH	0.0	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-005	B0W6B6	% Solids	94.4		%	0.01	1.0
		Chloride by IC	1.7		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	29		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	59.0		MG/KG	2.6	2.0
		Nitrate Nitrite	5.8		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.2		SOIL PH	0.0	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-006	B0W6B7	% Solids	93.4		%	0.01	1.0
		Chloride by IC	2.0		MG/KG	1.3	1.0
		Fluoride by IC	9.2		MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	41		MG/KG	1.3	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	53.9		MG/KG	2.7	2.0
		Nitrate Nitrite	7.3		MG/KG	0.21	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W6B7	Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.2		SOIL PH	0.0	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-007	B0W6B8	% Solids	96.4		%	0.01	1.0
		Chloride by IC	2.4		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	39		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	51.6		MG/KG	1.3	1.0
		Nitrate Nitrite	8.6		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.1		SOIL PH	0.0	1.0
		Sulfide	3.7		MG/KG	1.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC080-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC103-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LC114A-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI062-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LIC081-MB1	Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LN3B45-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM035-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD043-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK10	99LAM045-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W6B2	Chloride by IC	28.6	1.5	26.9	100.5	1.0
		Chloride by IC MSD	28.8	1.5	26.9	101.3	1.0
		Fluoride by IC	61.9	1.8	53.9	111.6	1.0
		Fluoride by IC MSD	62.0	1.8	53.9	111.6	1.0
		Nitrite by IC	29	1.3 u	27	106.5	1.0
		Nitrite by IC MSD	29	1.3 u	27	107.3	1.0
		Nitrate by IC	51	20	27	112.4	1.0
		Nitrate by IC MSD	51	20	27	112.4	1.0
		Cyanide, Total	4.5	0.54u	5.4	83.2	1.0
		Cyanide, Total MSD	4.8	0.54u	5.4	88.5	1.0
		Phosphate by IC	30.2	2.2	26.9	103.9	1.0
		Phosphate by IC MSD	30.0	2.2	26.9	103.4	1.0
		Soluble Chromium VI	4.4	0.43u	4.3	104.2	1.0
		Insoluble Chromium VI	1360	0.43u	1180	115.4	100
		Sulfate by IC	170	58.5	104	107.4	4.0
		Sulfate by IC MSD	170	58.5	104	107.1	4.0
		Nitrate Nitrite	10.6	4.4	5.1	123.9	5.0
-002	B0W6B3	Ammonia, as N	96.5	1.3 u	99.7	96.8	1.0
-007	B0W6B8	Sulfide	322	3.7	350	90.9	1.0
		Sulfide MSD	397	3.7	414	94.9	1.0
BLANK10	99LIC080-MB1	Chloride by IC	24.3	1.2 u	25.0	97.3	1.0
		Fluoride by IC	53.3	2.5 u	50.0	106.6	1.0
		Nitrite by IC	24	1.2 u	25	97.5	1.0
		Nitrate by IC	24	1.2 u	25	97.9	1.0
		Phosphate by IC	25.8	1.2 u	25.0	103.1	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.2	1.0
BLANK10	99LVI062-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.8	1.0
		Insoluble Chromium VI	1100	0.40u	1160	94.3	100
BLANK10	99LIC081-MB1	Sulfate by IC	24.0	1.2 u	25.0	95.9	1.0
BLANK10	99LN3B45-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.4	1.0
		Nitrate Nitrite MSD	5.2	0.20u	5.0	103.0	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.4	1.0
		Nitrate Nitrite MSD	5.0	0.20u	5.0	100.8	1.0
BLANK10	99LAM035-MB1	Ammonia, as N	52.4	1.2 u	50.0	104.8	1.0
		Ammonia, as N MSD	52.6	1.2 u	50.0	105.2	1.0
BLANK10	99LSD043-MB1	Sulfide	9.1	1.0 u	10.0	91.0	1.0
		Sulfide MSD	9.4	1.0 u	10.0	94.0	1.0

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INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	99LAM045-MB1	Ammonia, as N	51.4	1.2 u	50.0	102.8	1.0
		Ammonia, as N MSD	50.6	1.2 u	50.0	101.2	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0W6B2	Chloride by IC	100.5	101.3	0.85
		Fluoride by IC	111.6	111.6	0.027
		Nitrite by IC	106.5	107.3	0.78
		Nitrate by IC	112.4	112.4	0.016
		Cyanide, Total	83.2	88.5	6.2
		Phosphate by IC	103.9	103.4	0.46
		Sulfate by IC	107.4	107.1	0.26
-007	B0W6B8	Sulfide	90.9	94.9	4.3
BLANK10	99LN3B45-MB1	Nitrate Nitrite	102.4	103.0	0.58
BLANK10	99LANA55-MB1	Nitrate Nitrite	98.4	100.8	2.4
BLANK10	99LAM035-MB1	Ammonia, as N	104.8	105.2	0.48
BLANK10	99LSD043-MB1	Sulfide	91.0	94.0	3.2
BLANK10	99LAM045-MB1	Ammonia, as N	102.8	101.2	1.5

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INORGANICS PRECISION REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W6B2	Chloride by IC	1.5	1.5	1.8	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	20	20	0.31	1.0
		Cyanide, Total	0.54u	0.54u	NC	1.0
		Phosphate by IC	2.2	2.4	10.5	1.0
		Chromium VI	0.43u	0.43u	NC	1.0
		Sulfate by IC	58.5	58.7	0.36	4.0
		Nitrate Nitrite	4.4	5.0	14.8	1.0
-002REP	B0W6B3	Ammonia, as N	1.3 u	1.3 u	NC	1.0
-004REP	B0W6B5	% Solids	97.1	97.0	0.11	1.0
-007REP	B0W6B8	pH	9.1	9.1	0.0	1.0
		Sulfide	3.7	3.7	0.71	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L951

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC103-LC1	Cyanide, Total LCS	1.9	2.0	MG/KG	97.3
LCS2	99LC103-LC2	Cyanide, Total LCS	9.8	10	MG/KG	97.7
LCS10	99LC114A-LC1	Cyanide, Total LCS	2.0	2.0	MG/KG	100.2
LCS20	99LC114A-LC2	Cyanide, Total LCS	9.8	10	MG/KG	98.0

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B2						
% SOLIDS	001	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	001	S	99LIC080	08/30/99	09/25/99	09/25/99
CHLORIDE BY IC	001 REP	S	99LIC080	08/30/99	09/25/99	09/25/99
CHLORIDE BY IC	001 MS	S	99LIC080	08/30/99	09/25/99	09/25/99
CHLORIDE BY IC	001 MSD	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	001	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	001 REP	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	001 MS	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	001 MSD	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	001	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	001 REP	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	001 MS	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	001 MSD	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	001	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	001 REP	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	001 MS	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	001 MSD	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	001	S	99LC103	08/30/99	09/10/99	09/10/99
TOTAL CYANIDE	001 REP	S	99LC114A	08/30/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MS	S	99LC114A	08/30/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MSD	S	99LC114A	08/30/99	10/08/99	10/08/99
PHOSPHATE BY IC	001	S	99LIC080	08/30/99	09/25/99	09/25/99
PHOSPHATE BY IC	001 REP	S	99LIC080	08/30/99	09/25/99	09/25/99
PHOSPHATE BY IC	001 MS	S	99LIC080	08/30/99	09/25/99	09/25/99
PHOSPHATE BY IC	001 MSD	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	001	S	99LVI062	08/30/99	09/08/99	09/08/99
CHROMIUM VI	001 REP	S	99LVI062	08/30/99	09/08/99	09/08/99
CHROMIUM VI	001 MS	S	99LVI062	08/30/99	09/08/99	09/08/99
CHROMIUM VI	001 MSD	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	001	S	99LIC081	08/30/99	09/27/99	09/27/99
SULFATE BY IC	001 REP	S	99LIC081	08/30/99	09/27/99	09/27/99
SULFATE BY IC	001 MS	S	99LIC081	08/30/99	09/27/99	09/27/99
SULFATE BY IC	001 MSD	S	99LIC081	08/30/99	09/27/99	09/27/99
NITRATE NITRITE	001	S	99LN3B45	08/30/99	09/16/99	09/17/99
NITRATE NITRITE	001 REP	S	99LANA55	08/30/99	11/17/99	11/18/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	001 MS	S	99LANA55	08/30/99	11/17/99	11/18/99
AMMONIA	001	S	99LAM035	08/30/99	09/15/99	09/15/99
PH	001	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	001	S	99LSD043	08/30/99	09/03/99	09/04/99
B0W6B3						
% SOLIDS	002	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	002	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	002	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	002	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	002	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	002	S	99LC103	08/30/99	09/10/99	09/10/99
PHOSPHATE BY IC	002	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	002	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	002	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE NITRITE	002	S	99LN3B45	08/30/99	09/16/99	09/17/99
AMMONIA	002	S	99LAM035	08/30/99	09/15/99	09/15/99
AMMONIA	002 REP	S	99LAM045	08/30/99	11/19/99	11/19/99
AMMONIA	002 MS	S	99LAM045	08/30/99	11/19/99	11/19/99
PH	002	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	002	S	99LSD043	08/30/99	09/03/99	09/04/99
B0W6B4						
% SOLIDS	003	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	003	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	003	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	003	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	003	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	003	S	99LC103	08/30/99	09/10/99	09/10/99
PHOSPHATE BY IC	003	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	003	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	003	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE NITRITE	003	S	99LN3B45	08/30/99	09/16/99	09/17/99
AMMONIA	003	S	99LAM035	08/30/99	09/15/99	09/15/99
PH	003	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	003	S	99LSD043	08/30/99	09/03/99	09/04/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W6B5						
% SOLIDS	004	S	99L%S122	08/30/99	09/03/99	09/04/99
% SOLIDS	004 REP	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	004	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	004	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	004	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	004	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	004	S	99LC103	08/30/99	09/10/99	09/10/99
PHOSPHATE BY IC	004	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	004	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	004	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE NITRITE	004	S	99LN3B45	08/30/99	09/16/99	09/17/99
AMMONIA	004	S	99LAM035	08/30/99	09/15/99	09/15/99
PH	004	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	004	S	99LSD043	08/30/99	09/03/99	09/04/99
B0W6B6						
% SOLIDS	005	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	005	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	005	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	005	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	005	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	005	S	99LC103	08/30/99	09/10/99	09/10/99
PHOSPHATE BY IC	005	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	005	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	005	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE NITRITE	005	S	99LN3B45	08/30/99	09/16/99	09/17/99
AMMONIA	005	S	99LAM035	08/30/99	09/15/99	09/15/99
PH	005	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	005	S	99LSD043	08/30/99	09/03/99	09/04/99
B0W6B7						
% SOLIDS	006	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	006	S	99LIC080	08/30/99	09/25/99	09/25/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	006	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	006	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	006	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	006	S	99LC103	08/30/99	09/10/99	09/10/99
PHOSPHATE BY IC	006	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	006	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	006	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE NITRITE	006	S	99LN3B45	08/30/99	09/16/99	09/17/99
AMMONIA	006	S	99LAM035	08/30/99	09/15/99	09/15/99
PH	006	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	006	S	99LSD043	08/30/99	09/03/99	09/04/99
B0W6B8						
% SOLIDS	007	S	99L%S122	08/30/99	09/03/99	09/04/99
CHLORIDE BY IC	007	S	99LIC080	08/30/99	09/25/99	09/25/99
FLUORIDE BY IC	007	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRITE BY IC	007	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE BY IC	007	S	99LIC080	08/30/99	09/25/99	09/25/99
TOTAL CYANIDE	007	S	99LC103	08/30/99	09/10/99	09/10/99
PHOSPHATE BY IC	007	S	99LIC080	08/30/99	09/25/99	09/25/99
CHROMIUM VI	007	S	99LVI062	08/30/99	09/08/99	09/08/99
SULFATE BY IC	007	S	99LIC080	08/30/99	09/25/99	09/25/99
NITRATE NITRITE	007	S	99LN3B45	08/30/99	09/16/99	09/17/99
AMMONIA	007	S	99LAM035	08/30/99	09/15/99	09/15/99
PH	007	S	99LPH099	08/30/99	09/15/99	09/15/99
PH	007 REP	S	99LPH099	08/30/99	09/15/99	09/15/99
SULFIDE	007	S	99LSD043	08/30/99	09/03/99	09/04/99
SULFIDE	007 REP	S	99LSD043	08/30/99	09/03/99	09/04/99
SULFIDE	007 MS	S	99LSD043	08/30/99	09/03/99	09/04/99
SULFIDE	007 MSD	S	99LSD043	08/30/99	09/03/99	09/04/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
CHLORIDE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
FLUORIDE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
FLUORIDE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/01/99 RFW LOT # :9909L951

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
NITRITE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
TOTAL CYANIDE	LC1 L	S	99LC103	N/A	09/10/99	09/10/99
TOTAL CYANIDE	LC2 L	S	99LC103	N/A	09/10/99	09/10/99
TOTAL CYANIDE	MB1	S	99LC103	N/A	09/10/99	09/10/99
TOTAL CYANIDE	LC1 L	S	99LC114A	N/A	10/08/99	10/08/99
TOTAL CYANIDE	LC2 L	S	99LC114A	N/A	10/08/99	10/08/99
TOTAL CYANIDE	MB1	S	99LC114A	N/A	10/08/99	10/08/99
PHOSPHATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
PHOSPHATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
CHROMIUM VI	MB1	S	99LVI062	N/A	09/08/99	09/08/99
CHROMIUM VI	MB1 BS	S	99LVI062	N/A	09/08/99	09/08/99
CHROMIUM VI	MB1 BSD	S	99LVI062	N/A	09/08/99	09/08/99
SULFATE BY IC	MB1	S	99LIC081	N/A	09/27/99	09/27/99
SULFATE BY IC	MB1 BS	S	99LIC081	N/A	09/27/99	09/27/99
NITRATE NITRITE	MB1	S	99LN3B45	N/A	09/17/99	09/17/99
NITRATE NITRITE	MB1 BS	S	99LN3B45	N/A	09/17/99	09/17/99
NITRATE NITRITE	MB1 BSD	S	99LN3B45	N/A	09/17/99	09/17/99
NITRATE NITRITE	MB1	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BS	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BSD	S	99LANA55	N/A	11/17/99	11/18/99
AMMONIA	MB1	S	99LAM035	N/A	09/15/99	09/15/99
AMMONIA	MB1 BS	S	99LAM035	N/A	09/15/99	09/15/99
AMMONIA	MB1 BSD	S	99LAM035	N/A	09/15/99	09/15/99
SULFIDE	MB1	S	99LSD043	N/A	09/03/99	09/04/99
SULFIDE	MB1 BS	S	99LSD043	N/A	09/03/99	09/04/99
SULFIDE	MB1 BSD	S	99LSD043	N/A	09/03/99	09/04/99
SULFATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
SULFATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
AMMONIA	MB1	S	99LAM045	N/A	11/19/99	11/19/99
AMMONIA	MB1 BS	S	99LAM045	N/A	11/19/99	11/19/99
AMMONIA	MB1 BSD	S	99LAM045	N/A	11/19/99	11/19/99

RECRA LabNet Use Only
99091951

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078
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: 9/1/99 Date Due: 10/1/99
Account #:

Refrigerator #		1	6-1					6		6	6					
#/Type Container	Liquid															
	Solid	1g	1g-1					1g		1g	1g					
Volume	Liquid															
	Solid	250	500-1					500		250	4H					
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA							INORG: Metal								
	BNA															
	Pest/PCB															
	Herb								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	0624H OGCSC	0625H ODRO	OPCB	Met①		1PH	Ang①
001	BØW6B32			S	8/30/99	0745	✓	✓	✓	✓		✓	✓
002	43					0800							
003	54					0812							
004	65					0831							
005	6					0848							
006	7					0904							
007	8					0925							

Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRC

Special Instructions:

Run matrix QC
Saf# B99-078

COMPOSITE WASTE

9/8/99 - 1N3N2 added to Inorg① List.

OGCSC = 1-propanol + ethanol

DATE/REVISIONS:

1. Sample #001 (1000ml ag) was
2. received broken.
3. Run analyses from other
4. jars.
5. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, ISFD, INH3N, ICNTU, IN3N2

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9/1/99	0930

Relinquished by	Received by	Date	Time
Original	Rewritten		

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. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795288 63 - 4.3°C 4235795288 52

018

9904L451

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-89	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC96-066 / ERC96-063	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA 8-30-99	Offsite Property No.: A990236		Bill of Lading/Air Bill No.: 4235 7952 8852 (6B2-6B4) 8863 (6B5-6B8)
			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time										
001	B0W6B2	Soil	8-30-99	0745		X	X	X	X	X		3'-4'		
002	BOW6B3	Soil	8-30-99	0800		X	X	X	X	X		5.5'-6.5'		
003	BOW6B4	Soil	8-30-99	0812		X	X	X	X	X		8'-9'		
004	BOW6B5	Soil	8-30-99	0831		X	X	X	X	X		10.5'-11.5'		
005	BOW6B6	Soil	8-30-99	0848		X	X	X	X	X		14'	15'	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-30-99/1130	Received By: Ref IB	Date/Time: 8-30-99/1130
Relinquished By: Ref IB	Date/Time: 8-30-99 1530	Received By: C Nice	Date/Time: 8/30/99 1530
Relinquished By: C Nice	Date/Time: 8/31/99 1300	Received By: FEDEX	Date/Time: 8/31/99 1300
Relinquished By: Fed Ex	Date/Time: 9-1-99/0930	Received By: D. Smith	Date/Time: 9-1-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use Box 528 to Ship

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

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

4235 7952 8863 -4.3°

4235 7952 8852 -5.5°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-94	Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-5 >15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-066 / ERC 96-063	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA 8-30-99	Offsite Property No.: A99 02316		Bill of Lading/Air Bill No.: 4235 7952 8852 (682-684) 8863 (685-688)
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL), VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions
Sample No.	Matrix * / Sample Date / Sample Time										
06 B0W6B7	Soil / 8/30/99 / 09:04					X	X	X	X	X	19'-19'
07 B0W6B8	Soil / 8/30/99 / 09:25					X	X	X	X	X	20-21'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-30-99/1130	Received By: Ref 10	Date/Time: 8-30-99/1130
Relinquished By: REF 1B	Date/Time: 8/30/99 1300	Received By: C Price	Date/Time: 1300/8-30-99
Relinquished By: C Price	Date/Time: 8/31/99 1400	Received By: CAEDEX	Date/Time: 8/31/99 1400
Relinquished By: Geo Ex	Date/Time: 9.1.99/0930	Received By: D Smith	Date/Time: 9.1.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOWSL8 to ship

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

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