H1238

0055504

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1238 was composed of water sample designated under SAF No. B00-056 with a Project Designation of: 100-NR-1 TSD Sites R.A. Sampling - Water.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on February 15, 2001.

RECEIVED
OCT 23 2001
EDMC

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Tritium Analyses

The method blank and LCS were not scaled to 0.01 L, but kept as 1.0 sample. No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion
Melissa C. Mannion

2/15/01
Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

SAMPLE SUMMARY

SDG 7629
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1238

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B104B9	116-N-3, Decon Pad	WATER		R102015-01	B00-056	B00-056-017	01/31/01 09:10
Method Blank		WATER		R102015-03	B00-056		
Lab Control Sample		WATER		R102015-02	B00-056		
Duplicate (R102015-01)	116-N-3, Decon Pad	WATER		R102015-04	B00-056		01/31/01 09:10
Spike (R102015-01)	116-N-3, Decon Pad	WATER		R102015-05	B00-056		01/31/01 09:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

QC SUMMARY

SDG 7629
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1238

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
7629	B00-056-017	B104B9	WATER				02/02/01	2	R102015-01	7629-001
		Method Blank	WATER						R102015-03	7629-003
		Lab Control Sample	WATER						R102015-02	7629-002
		Duplicate (R102015-01)	WATER				02/02/01	2	R102015-04	7629-004
		Spike (R102015-01)	WATER				02/02/01	2	R102015-05	7629-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

SDG 7629
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1238

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	WATER	Americium 241 in Water	6963-169	5.0	1			1	1	1/1		
PU	WATER	Plutonium, Isotopic in Water	6963-169	5.0	1			1	1	1/1		
U	WATER	Uranium, Isotopic in Water	6963-169	5.0	1			1	1	1/1		
Beta Counting												
SR	WATER	Total Strontium in Water	6963-169	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	6963-169	20.0	1			1	1	1/1		
93B	WATER	Gross Beta in Water	6963-169	15.0	1			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	6963-169	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	6963-169	10.0	1			1	1	1/1	1/1	X
NI_L	WATER	Nickel-63 in Liquid	6963-169	10.0	1			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

WORK SUMMARY

SDG 7629
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1238

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B104B9			R102015-01	7629-001	93A/93		02/12/01	02/15/01	MCM	Gross Alpha in Water
116-N-3, Decon Pad		WATER	01/31/01	7629-001	93B/93		02/12/01	02/15/01	MCM	Gross Beta in Water
B00-056-017	B00-056		02/02/01	7629-001	AM		02/09/01	02/15/01	MCM	Americium 241 in Water
				7629-001	GAM		02/07/01	02/15/01	MCM	Gamma Emitters
				7629-001	H		02/09/01	02/15/01	MCM	Tritium in Water
				7629-001	NI_L		02/07/01	02/15/01	MCM	Nickel-63 in Liquid
				7629-001	PU		02/13/01	02/15/01	MCM	Plutonium, Isotopic in Water
				7629-001	SR		02/07/01	02/15/01	MCM	Total Strontium in Water
				7629-001	U		02/08/01	02/15/01	MCM	Uranium, Isotopic in Water
Method Blank			R102015-03	7629-003	93A/93		02/07/01	02/15/01	MCM	Gross Alpha in Water
		WATER		7629-003	93B/93		02/07/01	02/15/01	MCM	Gross Beta in Water
	B00-056			7629-003	AM		02/13/01	02/15/01	MCM	Americium 241 in Water
				7629-003	GAM		02/07/01	02/15/01	MCM	Gamma Emitters
				7629-003	H		02/09/01	02/15/01	MCM	Tritium in Water
				7629-003	NI_L		02/07/01	02/15/01	MCM	Nickel-63 in Liquid
				7629-003	PU		02/09/01	02/15/01	MCM	Plutonium, Isotopic in Water
				7629-003	SR		02/07/01	02/15/01	MCM	Total Strontium in Water
				7629-003	U		02/08/01	02/15/01	MCM	Uranium, Isotopic in Water
Lab Control Sample			R102015-02	7629-002	93A/93		02/07/01	02/15/01	MCM	Gross Alpha in Water
		WATER		7629-002	93B/93		02/07/01	02/15/01	MCM	Gross Beta in Water
	B00-056			7629-002	AM		02/09/01	02/15/01	MCM	Americium 241 in Water
				7629-002	GAM		02/07/01	02/15/01	MCM	Gamma Emitters
				7629-002	H		02/09/01	02/15/01	MCM	Tritium in Water
				7629-002	NI_L		02/07/01	02/15/01	MCM	Nickel-63 in Liquid
				7629-002	PU		02/09/01	02/15/01	MCM	Plutonium, Isotopic in Water
				7629-002	SR		02/07/01	02/15/01	MCM	Total Strontium in Water
				7629-002	U		02/08/01	02/15/01	MCM	Uranium, Isotopic in Water
Duplicate (R102015-01)			R102015-04	7629-004	93A/93		02/12/01	02/15/01	MCM	Gross Alpha in Water
116-N-3, Decon Pad		WATER	01/31/01	7629-004	93B/93		02/12/01	02/15/01	MCM	Gross Beta in Water
	B00-056		02/02/01	7629-004	AM		02/13/01	02/15/01	MCM	Americium 241 in Water
				7629-004	GAM		02/07/01	02/15/01	MCM	Gamma Emitters
				7629-004	H		02/09/01	02/15/01	MCM	Tritium in Water
				7629-004	NI_L		02/07/01	02/15/01	MCM	Nickel-63 in Liquid
				7629-004	PU		02/09/01	02/15/01	MCM	Plutonium, Isotopic in Water
				7629-004	SR		02/07/01	02/15/01	MCM	Total Strontium in Water
				7629-004	U		02/08/01	02/15/01	MCM	Uranium, Isotopic in Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

SDG 7629
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1238

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Spike (R102015-01)			R102015-05	7629-005	H		02/09/01	02/15/01	MCM	Tritium in Water
116-N-3, Decon Pad		WATER	01/31/01							
	B00-056		02/02/01							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B00-056	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
93B/93	B00-056	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
AM	B00-056	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
GAM	B00-056	Gamma Emitters	GAMMA_GS	1			1	1	1		4
H	B00-056	Tritium in Water	906.0_H3_LSC	1			1	1	1	1	5
NI_L	B00-056	Nickel-63 in Liquid	NI63_LSC	1			1	1	1		4
PU	B00-056	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	1			1	1	1		4
SR	B00-056	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
U	B00-056	Uranium, Isotopic in Water	UISO_PLATE_AEA	1			1	1	1		4
TOTALS				9			9	9	9	1	37

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/15/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1238

R102015-03 Method Blank

METHOD BLANK

SDG	7629	Client/Case no	Hanford	SDG_H1238	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R102015-03	Client sample id	Method Blank		
Dept sample id	7629-003	Material/Matrix		WATER	
		SAF No	B00-056		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.262	0.82	1.7	3.0	U	93A
Gross Beta	12587-47-2	-0.854	1.5	2.7	4.0	U	93B
Tritium	10028-17-8	-6.59	12	21	400	U	H
Nickel 63	13981-37-8	-1.96	2.1	3.7	15	U	NI_L
Total Strontium	SR-RAD	-0.296	0.51	1.1	2.0	U	SR
Uranium 233	U-233/234	-0.039	0.078	0.30	1.0	U	U
Uranium 235	15117-96-1	0	0.094	0.36	1.0	U	U
Uranium 238	U-238	0	0.078	0.30	1.0	U	U
Plutonium 238	13981-16-3	-0.063	0.13	0.48	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.063	0.13	0.48	1.0	U	PU
Americium 241	14596-10-2	0.075	0.15	0.29	1.0	U	AM
Potassium 40	13966-00-2	U		320		U	GAM
Cobalt 60	10198-40-0	U		14	25	U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Radium 226	13982-63-3	U		22		U	GAM
Radium 228	15262-20-1	U		48		U	GAM
Europium 152	14683-23-9	U		31	50	U	GAM
Europium 154	15585-10-1	U		34	50	U	GAM
Europium 155	14391-16-3	U		33	50	U	GAM
Thorium 228	14274-82-9	U		17		U	GAM
Thorium 232	TH-232	U		48		U	GAM
Uranium 235	15117-96-1	U		45		U	GAM
Uranium 238	U-238	U		1400		U	GAM
Americium 241	14596-10-2	U		81		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Water

QC-BLANK 37507

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

R102015-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7629
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1238
Case no TRC-SBB-207925

Lab sample id R102015-02
Dept sample id 7629-002

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B00-056

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	124	8.1	1.9	3.0		93A	100	4.0	124	60-140	70-130
Gross Beta	106	5.4	3.1	4.0		93B	110	4.4	96	76-124	70-130
Tritium	467	23	21	400		H	492	20	95	83-117	80-120
Nickel 63	373	8.1	4.4	15		NI_L	387	15	96	84-116	80-120
Total Strontium	75.0	2.2	0.56	2.0		SR	73.3	2.9	102	83-117	80-120
Uranium 233	32.0	3.2	1.4	1.0		U	31.0	1.2	103	82-118	80-120
Uranium 235	20.9	2.5	0.39	1.0		U	25.2	1.0	83	83-117	80-120
Uranium 238	35.7	3.5	1.4	1.0		U	33.7	1.3	106	82-118	80-120
Plutonium 238	31.1	3.7	0.34	1.0		PU	31.0	1.2	100	80-120	80-120
Plutonium 239/240	31.6	3.7	0.34	1.0		PU	33.0	1.3	96	81-119	80-120
Americium 241	25.3	1.2	0.15	1.0		AM	23.9	0.96	106	88-112	80-120
Cobalt 60	481	24	9.7	25		GAM	496	20	97	76-124	80-120
Cesium 137	532	22	14	15		GAM	502	20	106	75-125	80-120

100-NR-1 TSD Sites R.A. Smpl.-Water

QC-LCS 37506

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

R102015-04 B104B9

DUPLICATE

SDG	7629	Client/Case no	Hanford SDG H1238
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
DUPLICATE		**ORIGINAL**	
Lab sample id	R102015-04	Lab sample id	R102015-01
Dept sample id	7629-004	Dept sample id	7629-001
		Received	02/02/01
Client sample id	B104B9		
Location/Matrix	116-N-3, Decon Pad WATER		
Collected	01/31/01 09:10		
Custody/SAF No	B00-056-017 B00-056		

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	43.0	6.6	2.0	3.0		93A	62.2	7.5	2.0		36	52
Gross Beta	1800	20	3.1	4.0		93B	1700	20	4.0		6	32
Tritium	26.7	120	210	400	U	H	160	130	210	U	-	
Nickel 63	26.6	2.8	3.7	15		NI_L	27.0	2.8	3.7		1	31
Total Strontium	555	8.4	0.98	2.0		SR	529	8.5	1.1		5	21
Uranium 233	0.229	0.20	0.25	1.0	U	U	0.513	0.28	0.26	J	77	140
Uranium 235	0	0.079	0.30	1.0	U	U	0.041	0.083	0.32	U	-	
Uranium 238	0.458	0.26	0.25	1.0	J	U	0.239	0.21	0.26	U	63	144
Plutonium 238	3.80	0.95	0.42	1.0		PU	4.13	0.87	0.28		8	50
Plutonium 239/240	30.7	4.0	0.42	1.0		PU	30.1	3.2	0.28		2	27
Americium 241	22.2	2.3	0.26	1.0		AM	22.8	0.99	0.085		3	20
Potassium 40	U		300		U	GAM	U		260	U	-	
Cobalt 60	674	55	31	25		GAM	645	47	28		4	36
Cesium 137	457	42	36	15		GAM	450	36	31		2	37
Radium 226	U		47		U	GAM	U		42	U	-	
Radium 228	U		140		U	GAM	U		130	U	-	
Europium 152	U		63	50	U	GAM	U		53	U	-	
Europium 154	U		78	50	U	GAM	U		61	U	-	
Europium 155	U		54	50	U	GAM	U		45	U	-	
Thorium 228	U		34		U	GAM	U		29	U	-	
Thorium 232	U		140		U	GAM	U		130	U	-	
Uranium 235	U		80		U	GAM	U		66	U	-	
Uranium 238	U		4200		U	GAM	U		3700	U	-	
Americium 241	U		74		U	GAM	U		65	U	-	

100-NR-1 TSD Sites R.A. Smpl.-Water

QC-DUP#1 37508

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

R102015-05

B104B9

MATRIX SPIKE

SDG	7629	Client/Case no	Hanford SDG H1238
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
MATRIX SPIKE		ORIGINAL	
Lab sample id	R102015-05	Lab sample id	R102015-01
Dept sample id	7629-005	Dept sample id	7629-001
		Received	02/02/01
Client sample id	B104B9		
Location/Matrix	116-N-3, Decon Pad WATER		
Collected	01/31/01 09:10		
Custody/SAF No	B00-056-017 B00-056		

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	18700	410	210	400	X	H	19700	790	160	130	94	84-116	60-140

100-NR-1 TSD Sites R.A. Smpl.-Water

QC-MS#1 37509

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 02/15/01

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1238

R102015-01 B104B9

DATA SHEET

SDG	7629	Client/Case no	Hanford SDG H1238
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R102015-01	Client sample id	B104B9
Dept sample id	7629-001	Location/Matrix	116-N-3, Decon Pad WATER
Received	02/02/01	Collected	01/31/01 09:10
		Custody/SAF No	B00-056-017 B00-056

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	62.2	7.5	2.0	3.0		93A
Gross Beta	12587-47-2	1700	20	4.0	4.0		93B
Tritium	10028-17-8	160	130	210	400	U	H
Nickel 63	13981-37-8	27.0	2.8	3.7	15		NI_L
Total Strontium	SR-RAD	529	8.5	1.1	2.0		SR
Uranium 233	U-233/234	0.513	0.28	0.26	1.0	J	U
Uranium 235	15117-96-1	0.041	0.083	0.32	1.0	U	U
Uranium 238	U-238	0.239	0.21	0.26	1.0	U	U
Plutonium 238	13981-16-3	4.13	0.87	0.28	1.0		PU
Plutonium 239/240	PU-239/240	30.1	3.2	0.28	1.0		PU
Americium 241	14596-10-2	22.8	0.99	0.085	1.0		AM
Potassium 40	13966-00-2	U		260		U	GAM
Cobalt 60	10198-40-0	645	47	28	25		GAM
Cesium 137	10045-97-3	450	36	31	15		GAM
Radium 226	13982-63-3	U		42		U	GAM
Radium 228	15262-20-1	U		130		U	GAM
Europium 152	14683-23-9	U		53	50	U	GAM
Europium 154	15585-10-1	U		61	50	U	GAM
Europium 155	14391-16-3	U		45	50	U	GAM
Thorium 228	14274-82-9	U		29		U	GAM
Thorium 232	TH-232	U		130		U	GAM
Uranium 235	15117-96-1	U		66		U	GAM
Uranium 238	U-238	U		3700		U	GAM
Americium 241	14596-10-2	U		65		U	GAM

100-NR-1 TSD Sites R.A. Smpl.-Water

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/15/01

Test AM Matrix WATER
SDG 7629
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

METHOD SUMMARY

AMERICIUM 241 IN WATER

ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6963-169					
B104B9	R102015-01			7629-001	22.8
BLK (QC ID=37507)	R102015-03			7629-003	U
LCS (QC ID=37506)	R102015-02			7629-002	ok
Duplicate (R102015-01)	R102015-04			7629-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 5.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			0.085	0.400			77		843			9	02/09/01	02/09	SS-024
BLK (QC ID=37507)	R102015-03			0.29	0.400			74		107				02/09/01	02/13	SS-035
LCS (QC ID=37506)	R102015-02			0.15	0.400			60		845				02/09/01	02/09	SS-019
Duplicate (R102015-01) (QC ID=37508)	R102015-04			0.26	0.400			81		107			13	02/09/01	02/13	SS-036
Nominal values and limits from method				1.0	0.400			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-940	Plutonium Separation and Purification, rev 2
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.20	±	0.19
	YIELD	73	±	18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

Test PU Matrix WATER
SDG 7629
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6963-169						
B104B9	R102015-01			7629-001	4.13	30.1
BLK (QC ID=37507)	R102015-03			7629-003	U	U
LCS (QC ID=37506)	R102015-02			7629-002	ok	ok
Duplicate (R102015-01)	R102015-04			7629-004	ok	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 5.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			0.28	0.400			74		107			13	02/08/01	02/13	SS-028
BLK (QC ID=37507)	R102015-03			0.48	0.400			64		101				02/08/01	02/09	SS-022
LCS (QC ID=37506)	R102015-02			0.34	0.400			79		106				02/08/01	02/09	SS-021
Duplicate (R102015-01) (QC ID=37508)	R102015-04			0.42	0.400			61		106			9	02/08/01	02/09	SS-023
Nominal values and limits from method				1.0	0.400			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-940	Plutonium Separation and Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	0.38	± 0.18
FOR 4 SAMPLES	YIELD	70	± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

Test U Matrix WATER
SDG 7629
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6963-169														
B104B9	R102015-01			7629-001	0.513	J	U		U					
BLK (QC ID=37507)	R102015-03			7629-003	U		U		U					
LCS (QC ID=37506)	R102015-02			7629-002	ok		ok		ok					
Duplicate (R102015-01)	R102015-04			7629-004	ok	U	-	U	ok	J	50	52	0	17
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0		1.0		100		4	
100-NR-1 TSD Sites R.A. Smpl.-Water										Averages	50		0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 5.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			0.32	0.300			99		115			8	02/08/01	02/08	SS-027
BLK (QC ID=37507)	R102015-03			0.36	0.300			85		115				02/08/01	02/08	SS-029
LCS (QC ID=37506)	R102015-02			1.4	0.300			80		115				02/08/01	02/08	SS-028
Duplicate (R102015-01) (QC ID=37508)	R102015-04			0.30	0.300			97		115			8	02/08/01	02/08	SS-031
Nominal values and limits from method				1.0	0.300			30-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-910	Uranium Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.60 ± 1.1
YIELD 90 ± 18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

Test SR Matrix WATER
SDG 7629
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN WATER
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6963-169					
B104B9	R102015-01			7629-001	529
BLK (QC ID=37507)	R102015-03			7629-003	U
LCS (QC ID=37506)	R102015-02			7629-002	ok
Duplicate (R102015-01)	R102015-04			7629-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	2.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 10.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			1.1	0.300			95		100			7	02/07/01	02/07	GRB-231
BLK (QC ID=37507)	R102015-03			1.1	0.300			91		100				02/07/01	02/07	GRB-204
LCS (QC ID=37506)	R102015-02			0.56	0.300			91		134				02/07/01	02/07	GRB-207
Duplicate (R102015-01) (QC ID=37508)	R102015-04			0.98	0.300			94		100			7	02/07/01	02/07	GRB-202
Nominal values and limits from method				2.0	0.300					100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-501	Strontium in Water Samples, rev 1

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.94	±	0.51
YIELD	93	±	4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

Test 93A Matrix WATER
SDG 7629
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 6963-169					
B104B9	R102015-01	93		7629-001	62.2
BLK (QC ID=37507)	R102015-03	93		7629-003	U
LCS (QC ID=37506)	R102015-02	93		7629-002	ok
Duplicate (R102015-01)	R102015-04	93		7629-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	3.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 20.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01	93		2.0	0.200			44		100			12	02/07/01	02/12	GRB-114
BLK (QC ID=37507)	R102015-03	93		1.7	0.200			27		100				02/07/01	02/07	GRB-105
LCS (QC ID=37506)	R102015-02	93		1.9	0.200			26		100				02/07/01	02/07	GRB-115
Duplicate (R102015-01) (QC ID=37508)	R102015-04	93		2.0	0.200			42		100			12	02/07/01	02/12	GRB-115
Nominal values and limits from method				3.0	0.200			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	1.9	±	0.28
	RESIDUE	35	±	19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

Test 93B Matrix WATER
SDG 7629
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 6963-169					
B10489	R102015-01	93		7629-001	1700
BLK (QC ID=37507)	R102015-03	93		7629-003	U
LCS (QC ID=37506)	R102015-02	93		7629-002	ok
Duplicate (R102015-01)	R102015-04	93		7629-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	4.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 15.0 % Reference Lab Notebook 6963 pg. 169																
B10489	R102015-01	93		4.0	0.200			44		100			12	02/07/01	02/12	GRB-114
BLK (QC ID=37507)	R102015-03	93		2.7	0.200			27		100				02/07/01	02/07	GRB-105
LCS (QC ID=37506)	R102015-02	93		3.1	0.200			26		100				02/07/01	02/07	GRB-115
Duplicate (R102015-01) (QC ID=37508)	R102015-04	93		3.1	0.200			42		100			12	02/07/01	02/12	GRB-115
Nominal values and limits from method				4.0	0.200			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 3.2 ± 1.1
RESIDUE 35 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

Test GAM Matrix WATER
SDG 7629
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

METHOD SUMMARY

GAMMA EMITTERS

GAMMA SCAN

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6963-169						
B104B9	R102015-01			7629-001	645	450
BLK (QC ID=37507)	R102015-03			7629-003	U	U
LCS (QC ID=37506)	R102015-02			7629-002	ok	ok
Duplicate (R102015-01)	R102015-04			7629-004	ok	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	25	15

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 15.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			31	0.500					416			7	02/06/01	02/07	01,03,00
BLK (QC ID=37507)	R102015-03			11	0.500					416				02/06/01	02/07	MB,05,00
LCS (QC ID=37506)	R102015-02			14	0.500					416				02/06/01	02/07	01,04,00
Duplicate (R102015-01) (QC ID=37508)	R102015-04			36	0.500					301			7	02/06/01	02/07	01,03,00
Nominal values and limits from method				15	0.500					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 23 ± 25
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

Test H	Matrix WATER
SDG 7629	
Contact Melissa C. Mannion	

METHOD SUMMARY

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1238	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6963-169						
B104B9	R102015-01			7629-001	U	
BLK (QC ID=37507)	R102015-03			7629-003	U	
LCS (QC ID=37506)	R102015-02			7629-002	ok	
Duplicate (R102015-01)	R102015-04			7629-004	-	U
Spike (R102015-01)	R102015-05			7629-005	ok	X

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

100-NR-1 TSD Sites R.A. Smpl.-Water

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 10.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			210	0.0100			100		100			9	02/09/01	02/09	LSC-004
BLK (QC ID=37507)	R102015-03			21	1.00			10		100				02/09/01	02/09	LSC-004
LCS (QC ID=37506)	R102015-02			21	1.00			10		100				02/09/01	02/09	LSC-004
Duplicate (R102015-01) (QC ID=37508)	R102015-04			210	0.0100			100		100			9	02/09/01	02/09	LSC-004
Spike (R102015-01) (QC ID=37509)	R102015-05			210	0.0500			20		100			9	02/09/01	02/09	LSC-004
Nominal values and limits from method				400	0.0100					25			180			

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-210	Tritium in Water Samples by Distillation, rev 3

AVERAGES ± 2 SD	MDA 130	± 210
FOR 5 SAMPLES	YIELD 48	± 95

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	02/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1238

METHOD SUMMARY

NICKEL-63 IN LIQUID

LIQUID SCINTILLATION COUNTING

Test NI_L Matrix WATER
SDG 7629
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1238

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63
Preparation batch 6963-169					
B104B9	R102015-01			7629-001	27.0
BLK (QC ID=37507)	R102015-03			7629-003	U
LCS (QC ID=37506)	R102015-02			7629-002	ok
Duplicate (R102015-01)	R102015-04			7629-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Smpl.-Water				RDLs (pCi/L)	15

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6963-169 2σ prep error 10.0 % Reference Lab Notebook 6963 pg. 169																
B104B9	R102015-01			3.7	0.300			95		100			7	02/07/01	02/07	LSC-004
BLK (QC ID=37507)	R102015-03			3.7	0.300			95		100				02/07/01	02/07	LSC-004
LCS (QC ID=37506)	R102015-02			4.4	0.300			93		78				02/07/01	02/07	LSC-004
Duplicate (R102015-01) (QC ID=37508)	R102015-04			3.7	0.300			94		100			7	02/07/01	02/07	LSC-004
Nominal values and limits from method				15	0.300					50			180			

PROCEDURES	REFERENCE	NI63_LSC
	RP-070	Sample Dissolution - HF Method, rev 0
	RP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 3.9 ± 0.70
YIELD 94 ± 2

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-056-017	Page 1 of 1

Collector: R. Kerkow	Company Contact: J. Fancher — Telephone No.: 373-9123	Project Coordinator: TRENT, SJ	Price Code: 7C — Data Turnaround: 15 Day
Project Designation: 100-NR-1 TSD Sites R. A. Sampling - Water	Sampling Location: 116-N-3, Decon Pad H1238 (7629)	SAF No.: B00-056	Air Quality ☐
Ice Chest No.: ERC99-007 (of)	Field Logbook No.: EL-1524 — COA: R1325N2600	Method of Shipment: Fed Ex	
Shipped To: TMA/~~NEGRA~~ RK 1/30/01 EBERLINE	Offsite Property No.: A010169	Bill of Lading/Air Bill No.: 4235 7954 2102	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	None	HNO3 to pH <2	Cool 4C	HNO3 to pH <2
Type of Container	P	G	P	G/P
No. of Container(s)	1	1	1	4
Volume	RK ~~250mL~~ 500mL 1/30/01	500mL	500mL	1L

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 1/31/01. Collector not available to relinquish samples on 2/1/01 for shipment. RT 2-1-01

SAMPLE ANALYSIS

	Tritium - H3	See item (1) in Special Instructions. RK 1/30/01	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate) RK 1/30/01	See item (2) in Special Instructions.				
							TIE TO'	

Sample No.	Matrix *	Sample Date	Sample Time									
B104B9	WATER	1-31-01	0910	X			X			B11C63		

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

Relinquished By	Date/Time	Received By	Date/Time
RB Kerkow RB Kerkow	1-31-01 1030	R. Fehlberg R. Fehlberg	01-31-01 1030
R. Fehlberg R. Fehlberg	01-31-01 1140	Received by [illegible]	1140
Removed from Ref 1A 3728	2-1-01 0900	Ref 1A	01-31-01 0900
R. Thorne	2-1-01 0900	R. Thorne	2-1-01
Federal Express	02/2/01 10 AM	Federal Express	02/01/01
Federal Express	02/2/01 10 AM	E. Aguirre	2-2-01

SPECIAL INSTRUCTIONS

Laboratory is only to report the following analytes: metals (chromium and CVAA Hg only); IC anions (nitrate only); Gamma spec (Cs137, Co60, Eu152, Eu154, Eu155), AEA (Am241, add U238 to AEA), Iso Pu, total Sr, N63, and H3. ; Lab COA: R1325N2F00

(1) ICP Metals - 6010A ~~(TAL) (Barium, Cadmium,~~ Chromium, ~~Silver), ICP Metals - 6010A (Add-on). (Arsenic, Lead, Selenium)~~; Mercury - 7470 - (CV) RK 1/30/01 RK 1/30/01

(2) Gross Alpha; Gross Beta; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Gamma Spec - Add-on (Americium-241)~~; Americium-241; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Nickel-63; Isotopic Uranium RK 1/30/01

UNFILTERED RK 1/31/01

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

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

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 2-2-01

CoC No. B00-056-017

Container I.D. No. ERC99-067 Requested TAT (Days) 15 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: 1
7. Number of containers per sample: PLEASE (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. Reguro Date: 02-2-01 Time: 10:AM

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-056 H1238

DATE RECEIVED: 02/02/01 LVL LOT # :0102L897

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B104B9						
CHROMIUM, TOTAL	001	W	01L0047	01/31/01	02/09/01	02/14/01
CHROMIUM, TOTAL	001 REP	W	01L0047	01/31/01	02/09/01	02/14/01
CHROMIUM, TOTAL	001 MS	W	01L0047	01/31/01	02/09/01	02/14/01
MERCURY, TOTAL	001	W	01C0042	01/31/01	02/06/01	02/06/01
MERCURY, TOTAL	001 REP	W	01C0042	01/31/01	02/06/01	02/06/01
MERCURY, TOTAL	001 MS	W	01C0042	01/31/01	02/06/01	02/06/01

LAB QC:

CHROMIUM LABORATORY	LC1 BS	W	01L0047	N/A	02/09/01	02/14/01
CHROMIUM, TOTAL	MB1	W	01L0047	N/A	02/09/01	02/14/01
MERCURY LABORATORY	LC1 BS	W	01C0042	N/A	02/06/01	02/06/01
MERCURY, TOTAL	MB1	W	01C0042	N/A	02/06/01	02/06/01
MERCURY, TCLP LEACHA	MB2	W	01C0042	N/A	02/06/01	02/06/01

FEB 2001
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B00-056
LVL#: 0102L897
SDG/SAF#: H1238/B00-056

W.O.#: 10985-001-001-9999-00
Date Received: 02-02-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.

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

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

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

5. All Continuing Calibration Verifications (CCVs) were within the 90-110% control limits (80-120% for Mercury). The Initial Calibration Verification (ICV) standard cup on the Trace ICP was not full enough for the analysis of Chromium. The first of three exposures of the ICV was in control, and a CCV was run prior to any client samples being analyzed. There should be no impact to the sample results, as the problem was identified to be unrelated to the actual calibration of the instrument.

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

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

11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision 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 13 pages.

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

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

14. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra LabNet Philadelphia.

J. Michael Taylor
President
Lionville Laboratory Incorporated
jjw/m02-897

02-16-01
Date

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 01MR015

Initiator: [illegible] Batch: 01021897 Parameter: Hg
Date: 2/6/01 Samples: 001 Matrix: H2O
Client: TNW-Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 01CU047

1. Reason for SDR

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

b. General Discrepancy

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

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

c. Problem (Include all relevant specific results; attach data if necessary)
Sample did not maintain purple color from $KMnO_4$ addition for 15 min per method
Prepped at 5x dilution.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [illegible] 2/6/01

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

5. Final Action...signature/date: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative MJ 2/16/01
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson	__	__ GC/LC: Pastor
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rycklak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kiger	2	Z Other: D. Beagle

L-WI-006/E-01/01

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0102L897

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/15/01

CLIENT: TNU-HANFORD B00-056 LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B104B9	Chromium, Total	4.5	UG/L	0.60	1.0
		Mercury, Total	0.50 u	UG/L	0.50	5.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/15/01

CLIENT: TNU-HANFORD B00-056 LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0047-MB1	Chromium, Total	0.60 u	UG/L	0.60	1.0
BLANK1	01C0042-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK2	01C0042-MB2	Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 02/15/01

CLIENT: TNU-HANFORD B00-056 LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B104B9	Chromium, Total	198	4.5	200	96.8	1.0
		Mercury, Total	4.4	0.50u	5.0	88.1	5.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 02/15/01

CLIENT: TNU-HANFORD B00-056 LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B104B9	Chromium, Total	4.5	4.9	8.5	1.0
		Mercury, Total	0.50u	0.50u	NC	5.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/15/01

CLIENT: TNU-HANFORD B00-056 LVL LOT #: 0102L097

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0047-LC1	Chromium, LCS	500	500	UG/L	100.0
LCS1	01C0042-LC1	Mercury, LCS	4.8	5.0	UG/L	96.6

RECRA LabNet Use Only
01021897

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~Bechtel Hanford~~ TRU-Hanford SAF. B00-056 TK 2-2-01

Est. Final Proj. Sampling Date

Project # 11343-0060-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 15 day

Date Rec'd 2-2-01 Date Due 2-17-01

Account #

		A	B
Refrigerator #		6	6
#/Type Container	Liquid	1AG	1PL
	Solid		
Volume	Liquid	500	500
	Solid		
Preservatives		HNO3	-

ANALYSES REQUESTED →

ORGANIC				INORG		
VOA	BNA	Pest/PCB	Herb	ICP Metal	CN	IC Anions

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	MCRTO MHGTO	ICNO3 ICNO2	ICSO4
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	B104B9	✓	✓	WATER	1-31-01	0910	X	X	✓

Special Instructions: SAF B00-056

DATE/REVISIONS:

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

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # see below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times TK 2-2-01 (Y) or N not NO3

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. 2° °C

Relinquished by	Received by	Date	Time
FEDEX	Calvin Hernandez	1-31-01	0910

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL DEWDITTER		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 2098

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-056-017	Page 1 of 1

Collector: R. Kerkow	Company Contact: J. Fancher	Telephone No.: 373-9123	Project Coordinator: TRENT, SJ
Price Code: 7C	Data Turnaround: 15 Day	Air Quality ☐	
Project Designation: 100-NR-1 TSD Sites R. A. Sampling - Water	Sampling Location: 116-N-3, Decon Pad		SAF No.: B00-056
Ice Chest No.: ER194-074 (3 of 3)	Field Logbook No.: EL-1524	COA: R1325N2600	Method of Shipment: Fed Ex
Shipped To: ~~TMR~~/RECRA	Offsite Property No.: A010198		Bill of Lading/Air Bill No.: 4235795 1-2098

RK 1/30/01

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	None	HNO3 to pH <2	Cool 4C	HNO3 to pH <2
Type of Container	P	G	P	G/P
No. of Container(s)	1	1	1	4
Volume	~~250mL~~ 500mL	500mL	500mL	1L
SAMPLE ANALYSIS	Tritium - H3	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate)	See item (2) in Special Instructions.

RK 1/30/01 RK 1/30/01

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 1 31 01. Collector not available to relinquish samples on 2 1 01 for shipment. RT 2-1-01

TIC TO B1C63

Sample No.	Matrix *	Sample Date	Sample Time										
B104B9	WATER	1-31-01	0910		X	X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Kerkow	1030 1-31-01	R. Fellows / R. Fellows	1030 01-31-01
Relinquished By	R. Fellows / R. Fellows	1140 01-31-01	Stoney M	1140 01-31-01
Relinquished By	REMOVED FROM Ref 1A 3728	0400 2-1-01	Received By: R. Thoren	0400 2-1-01
Relinquished By	R. Thoren	0400 2-1-01	Received By: FEDEX	Date/Time
Relinquished By	FED EX	2-2-01 9:30	Received By: Carla Hernandez	2-2-01 9:30
Relinquished By		9:30	Received By	9:30

RT 2-1-01

SPECIAL INSTRUCTIONS

Laboratory is only to report the following analytes: metals (chromium and CVAA Hg only); IC anions (nitrate only); Gamma spec (Cs137, Co60, Eu152, Eu154, Eu155), AEA (Am241, add U238 to AEA), Iso Pu, total Sr, N63, and H3. Lab COA: R1325N2F00

(1) ICP Metals - 6010A ~~(TAL) (Barium, Cadmium, Chromium, Silver); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium);~~ Mercury - 7470 - (CV) RK 1/30/01 RK 1/30/01

(2) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Isotopic Plutonium; Strontium-89,90 - Total Sr; Nickel-63; Isotopic Uranium~~ RK 1/30/01

RT 2-1-01

UNFILTERED RK 1/31/01

Matrix *

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

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

BHI-EE-011 (10/99)

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-056 H1238

DATE RECEIVED: 02/02/01 LVL LOT # :0102L897

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B104B9						
NITRATE BY IC	001	W	01LIC010	01/31/01	02/13/01	02/13/01
NITRATE BY IC	001 REP	W	01LIC010	01/31/01	02/13/01	02/13/01
NITRATE BY IC	001 MS	W	01LIC010	01/31/01	02/13/01	02/13/01

LAB QC:

NITRATE BY IC	MB1	W	01LIC010	N/A	02/13/01	02/13/01
NITRATE BY IC	MB1 BS	W	01LIC010	N/A	02/13/01	02/13/01

FEB 2001
RECEIVED

01
08
d2/mf

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B00-056 H1238
LVL#: 0102L897

W.O.#: 10985-001-001-9999-00
Date Received: 02-02-01

INORGANIC NARRATIVE

As of 27 January 2001, Recra LabNet Philadelphia became Lionville Laboratory Inc. Some forms may still reference Recra LabNet Philadelphia.

1. This narrative covers the analysis of 1 water sample.

2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding time as required by the method and/or contract was not met as the sample was received past hold.

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

5. The method blank was within the method criteria.

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

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

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

02-16-01
Date

njp\i02-897

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

02
01
12/01

Lionville Laboratory, Inc.

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
___Bromide ___Chloride ___Fluoride	___ 300.0	___ 9056	
✓ Nitrate ___Nitrite ___Phosphate	✓ 300.0	___ 9056	
___Sulfate ___Formate ___Acetate ___Oxalate	___ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved ___Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		
Other:		**Method:**	

03
~~02~~
1/21/01

Lionville Laboratory, Inc.

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.

04
03

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/16/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B104B9	Nitrate by IC	0.25 u	MG/L	0.25	1.0

05
04

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/16/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0102L897
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LIC010-MB1	Nitrate by IC	0.25 u	MG/L	0.25	1.0

06
~~05~~
2/16/01

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 02/16/01

CLIENT: TNUHANFORD B00-056 H1238

LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B104B9	Nitrate by IC	4.87	0.25u	5.00	97.3	1.0
BLANK10	01LIC010-MB1	Nitrate by IC	5.03	0.25u	5.00	100.6	1.0

07
06
2/16/01

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 02/16/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0102L897

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B104B9	Nitrate by IC	0.25u	0.25u	NC	1.0

08
07

RECRA LabNet Use Only

01021897

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(9) Petrone

RECRA LabNet

Client ~~Bechtel Hanford~~ Tru-Hanford SAF. B00-056 (TL 2-2-01)

Est. Final Proj. Sampling Date

Project # 11343-6006-001-9999-00

Project Contact/Phone #

RECRA Project Manager DJ

QC Spec Del Std TAT 15 day

Date Rec'd 2-2-01 Date Due 2-17-01

Account #

		A	B	
Refrigerator #		L0	L0	1
#/Type Container	Liquid	1AG	1PL	1
	Solid			
Volume	Liquid	500	500	1
	Solid			
Preservatives		HNO3	-	1

ANALYSES REQUESTED →

ORGANIC				INORG		
VOA	BNA	Pest/PCB	Herb	ICP Metal	CN	IC Anions

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	mcRTO mHGTO		ICN03 ICNO2 (TL 2-2-01)	ICSO4 (TL 2-2-01)
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	B104B9	✓	✓	WATER	1-31-01	0910	X		X	✓

Special Instructions: SAF B00-056

DATE/REVISIONS:

2-9-01 1. ICNO2+ICSO4 cancelled

2.

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # SEE below

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times (TL 2-2-01) 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. 2 °C

Relinquished by	Received by	Date	Time
FED EX	Carla Hernandez	2-2-01 ~~1-31-01~~	0930 ~~0910~~
		1-31-01	

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 2098

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-056-017	Page 1 of 1

Collector R. Kerkow	Company Contact J. Fancher	Telephone No. 373-9123	Project Coordinator TRENT, SJ
Price Code 7C	Data Turnaround 15 Day	Air Quality ☐	
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Water	Sampling Location 116-N-3, Decon Pad		SAF No. B00-056
Ice Chest No. ER194-074 (3 of 3)	Field Logbook No. EL-1524	COA R1325N2600	Method of Shipment Fed Ex
Shipped To ~~TMR~~/RECRA RK 1/30/01	Offsite Property No. A010198		Bill of Lading/Air Bill No. 4255795 1-2098

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	None	HNO3 to pH <2	Cool 4C	HNO3 to pH <2
Type of Container	P	G	P	G/P
No. of Container(s)	1	1	1	4
Volume	~~250mL~~ 500mL	500mL	500mL	1L

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 1 31 01. Collector not available to relinquish samples on 2 1 01 for shipment. RT 2-1-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Tritium - H3 (RK 1/30/01)	See item (1) in Special Instructions	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate)	See item (2) in Special Instructions (RK 1/30/01)		TIC TO				
B104B9	WATER	1-31-01	0910		X	X			B1C63				

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

Relinquished By	Date/Time	Received By	Date/Time
R. Kerkow	1-31-01 1030	R. Fellows / R. Fellows	1-31-01 1030
R. Fellows / R. Fellows	01-31-01 1140	Stoney	1140
Ref 1A 3728 (RT 2-1-01)	2-1-01 0400	R. Thoren	2-1-01 0400
R. Thoren	2-1-01 0400	FEDEX	
FED EX	2-2-01 9:30	Carlos Hernandez	2-2-01 9:30
	9:30		9:30

SPECIAL INSTRUCTIONS

Laboratory is only to report the following analytes: metals (chromium and CVAA Hg only); IC anions (nitrate only); Gamma spec (Cs137, Co60, Eu152, Eu154, Eu155), AEA (Am241, add U238 to AEA), Iso Pu, total Sr, N63, and H3. Lab COA: R1325N2F00

(1) ICP Metals - 6010A ~~(TAL) (Barium, Cadmium, Chromium, Silver); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium);~~ Mercury - 7470 - (CV) (RK 1/30/01) (RK 1/31/01)

(2) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Isotopic Plutonium; Strontium-89,90 — Total Sr; Nickel-63; Isotopic Uranium~~ RK 1/31/01

RT 2-1-01

UNFILTERED RK 1/31/01

Matrix *

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

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

BHI-EE-011 (10/99)

MAR 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-056 H1238

DATE RECEIVED: 03/07/01 LVL LOT # :0103L196

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B104B9						
PH	001	W	01LPH018	01/31/01	03/07/01	03/07/01
TOTAL DISSOLVED SOLI	001	W	01LSS040	01/31/01	03/07/01	03/08/01
TOTAL DISSOLVED SOLI	001 REP	W	01LSS040	01/31/01	03/07/01	03/08/01
TOTAL SUSPENDED SOLI	001	W	01LSSA43	01/31/01	03/13/01	03/14/01
TOTAL SUSPENDED SOLI	001 REP	W	01LSSA43	01/31/01	03/13/01	03/14/01
LAB QC:						
TOTAL DISSOLVED SOLI	MB1	W	01LSS040	N/A	03/07/01	03/08/01
TOTAL DISSOLVED SOLI	MB1 BS	W	01LSS040	N/A	03/07/01	03/08/01
TOTAL DISSOLVED SOLI	MB1 BSD	W	01LSS040	N/A	03/07/01	03/08/01
TOTAL SUSPENDED SOLI	MB1	W	01LSSA43	N/A	03/13/01	03/14/01
TOTAL SUSPENDED SOLI	MB1 BS	W	01LSSA43	N/A	03/13/01	03/14/01
TOTAL SUSPENDED SOLI	MB1 BSD	W	01LSSA43	N/A	03/13/01	03/14/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B00-056 H1238
LVL#: 0103L196

W.O.#: 11343-606-001-9999-00
Date Relogged: 03-07-01

INORGANIC NARRATIVE

As of 27 January 2001, Recra LabNet Philadelphia became Lionville Laboratory Inc. Some forms may still reference Recra LabNet Philadelphia.

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were not met as the analyses were requested past the sample holding times.

4. The method blank (MB) for Total Suspended Solids was within the method criteria, however MB 01LSS040-MB1 for Total Dissolved Solids (TDS) was above the reporting limit; TDS sample result was greater than 10 times the reporting limit.

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

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

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

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

03-14-01
Date

njp\i03- 196

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

Lionville Laboratory, Inc.

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
___Bromide ___Chloride ___Fluoride	___ 300.0	___ 9056	
___Nitrate ___Nitrite ___Phosphate	___ 300.0	___ 9056	
___Sulfate ___Formate ___Acetate ___Oxalate	___ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
✓ pH ___ pH; paper	___ 150.1	✓ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach		___ 1312	
Total ✓ Dissolved ✓ Suspended ___Solids	160 ✓.1	✓.2 ___.3	
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
__Total __Dissolved __Suspended	___ 160.4		
Other:		**Method:**	

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.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/14/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0103L196

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B104B9	pH	7.0	PH UNIT	0.01	1.0
		Total Dissolved Solids	188	MG/L	12.5	1.0
		Total Suspended Solids	14.4	MG/L	6.25	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/14/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0103L196

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LSS040-MB1	Total Dissolved Solids	6.00	MG/L	5.00	1.0
BLANK10	01LSSA43-MB1	Total Suspended Solids	5.00 u	MG/L	5.00	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 03/14/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0103L196

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	01LSS040-MB1	Total Dissolved Solids	103	0.000	100	103.0	1.0
		Total Dissolved Solids	101	0.000	100	101.0	1.0
BLANK10	01LSSA43-MB1	Total Suspended Solids	97.9	5.00u	100	97.9	1.0
		Total Suspended Solids	99.3	5.00u	100	99.3	1.0

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 03/14/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0103L196

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LSS040-MB1	Total Dissolved Solids	103.0	101.0	2.0
BLANK10	01LSSA43-MB1	Total Suspended Solids	97.9	99.3	1.4

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 03/14/01

CLIENT: TNUHANFORD B00-056 H1238 LVL LOT #: 0103L196

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B104B9	Total Dissolved Solids	188	168	11.3	1.0
		Total Suspended Solids	14.4	16.7	14.8	1.0

Lionville Laboratory Use Only
0103L196

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

10

Client: TMU-Hanford B00-056
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 3 day

Date Rec'd: 3-7-01 Date Due: 3-10-01

Refrigerator #											B-1					
#/Type Container	Liquid										2-1					
	Solid										1P-1					
Volume	Liquid										500-1					
	Solid															
Preservatives											- -1					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		Lionville Laboratory Use Only														
											HTDS	HTSS	HPH			

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	HTDS	HTSS	HPH
001	B104B9	✓	✓	(L)	1-31-01	0910	✓	✓	

Special Instructions: SOF B00-056

DATE/REVISIONS:
1. Brlog of 0102L897-001
2. per SDR01PM023
3. Samples out of hold
4.
5.
6.

Relinquished by	Received by	Date	Time
Brlog	TKoppel	3-7-01	-

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

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

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ___ °C