

H1064

0054249

Thermo Retec
W.O. No. R0-10-015-7510
R0-10-016-7511

RECEIVED
JAN 09 2000
EDMC

Bechtel Hanford Inc.
SDG H1064

Case Narrative

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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1064 was composed of six water samples designated under SAF No. C00-035 with a Project Designation of: ERDF GW Monitoring, September 2000.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 25, 2000 and December 5, 2000.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Iodine-129 Analyses

Samples B103B0 and B103B4 were counted by a Liquid Scintillation Counter (LSC). No problems were encountered during the course of the analyses.

2.5 Radium-226 Analyses

No problems were encountered during the course of the analyses.

2.6 Total Uranium 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 C. Mannion
Melissa C. Mannion
Program Manager

12/5/00
Date

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SAMPLE SUMMARY

SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10398	HANFORD SITE	WATER		R010015-01	C00-035	C00-035-1	09/29/00 09:51
B103B2	HANFORD SITE	WATER		R010015-02	C00-035	C00-035-3	09/29/00 10:31
B103B6	HANFORD SITE	WATER		R010015-03	C00-035	C00-035-5	09/29/00 11:22
B103B8	HANFORD SITE	WATER		R010015-04	C00-035	C00-035-6	09/29/00 11:22
Method Blank		WATER		R010015-06	C00-035		
Lab Control Sample		WATER		R010015-05	C00-035		
Duplicate (R010015-02)	HANFORD SITE	WATER		R010015-07	C00-035		09/29/00 10:31
Spike (R010015-02)	HANFORD SITE	WATER		R010015-08	C00-035		09/29/00 10:31

SAMPLE SUMMARY

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7510
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7510	C00-035-1	B10398	WATER				10/03/00	4	R010015-01	7510-001
	C00-035-3	B10382	WATER				10/03/00	4	R010015-02	7510-002
	C00-035-5	B10386	WATER				10/03/00	4	R010015-03	7510-003
	C00-035-6	B10388	WATER				10/03/00	4	R010015-04	7510-004
		Method Blank	WATER						R010015-06	7510-006
		Lab Control Sample	WATER						R010015-05	7510-005
		Duplicate (R010015-02)	WATER				10/03/00	4	R010015-07	7510-007
		Spike (R010015-02)	WATER				10/03/00	4	R010015-08	7510-008

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7510
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED		QUALI-					
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIERS
Beta Counting												
TC	WATER	Technetium 99 in Water	6955-127	10.0	4			1	1	1/1		
Gas Proportional Counting												
82B	WATER	Gross Beta in Water	6955-127	15.0	4			1	1	1/1		X
88A	WATER	Gross Alpha in Water	6955-127	20.0	4			1	1	1/1		
Gamma Spectroscopy												
I	WATER	Iodine 129 in Water	6955-127	5.0	4			1	1	1/1		
Kinetic Phosphorimetry												
U_T	WATER	Uranium, Total in Water	6955-127	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	WATER	Carbon 14 in Water	6955-127	10.0	4			1	1	1/1	1/1	
Radon Counting												
RA	WATER	Radium 226 in Water	6955-127	5.0	4			1	1	1/1		

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

PREP BATCH SUMMARY

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7510
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

CLIENT SAMPLE ID		MATRIX	LAB SAMPLE ID		TEST	SUF-		REVIEWED	BY	METHOD
LOCATION	SAF No		COLLECTED	PLANCHET		FIX	ANALYZED			
CUSTODY			RECEIVED							
B10398			R010015-01	7510-001	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7510-001	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
C00-035-1	C00-035		10/03/00	7510-001	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-001	I		11/08/00	11/25/00	MCM	Iodine 129 in Water
				7510-001	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-001	TC		11/17/00	11/25/00	MCM	Technetium 99 in Water
				7510-001	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
B10382			R010015-02	7510-002	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7510-002	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
C00-035-3	C00-035		10/03/00	7510-002	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-002	I		11/03/00	11/25/00	MCM	Iodine 129 in Water
				7510-002	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-002	TC		11/20/00	11/25/00	MCM	Technetium 99 in Water
				7510-002	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
B10386			R010015-03	7510-003	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7510-003	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
C00-035-5	C00-035		10/03/00	7510-003	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-003	I		11/08/00	11/25/00	MCM	Iodine 129 in Water
				7510-003	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-003	TC		11/21/00	11/25/00	MCM	Technetium 99 in Water
				7510-003	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
B10388			R010015-04	7510-004	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7510-004	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
C00-035-6	C00-035		10/03/00	7510-004	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-004	I		11/03/00	11/25/00	MCM	Iodine 129 in Water
				7510-004	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-004	TC		11/20/00	11/25/00	MCM	Technetium 99 in Water
				7510-004	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
Method Blank			R010015-06	7510-006	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
		WATER		7510-006	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
	C00-035			7510-006	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-006	I		11/03/00	11/25/00	MCM	Iodine 129 in Water
				7510-006	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-006	TC		11/20/00	11/25/00	MCM	Technetium 99 in Water
				7510-006	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water

WORK SUMMARY

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7510
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED		TEST	SUF-					
CUSTODY	SAF No	RECEIVED	PLANCHET		FIX	ANALYZED	REVIEWED	BY	METHOD	
Lab Control Sample		R010015-05	7510-005	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water	
	WATER		7510-005	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water	
	C00-035		7510-005	C		11/02/00	11/25/00	MCM	Carbon 14 in Water	
			7510-005	I		11/20/00	11/25/00	MCM	Iodine 129 in Water	
			7510-005	RA		11/07/00	11/25/00	MCM	Radium 226 in Water	
			7510-005	TC		11/21/00	11/25/00	MCM	Technetium 99 in Water	
			7510-005	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water	
Duplicate (R010015-02)		R010015-07	7510-007	82B/82		10/28/00	11/25/00	MCM	Gross Beta in Water	
HANFORD SITE	WATER	09/29/00	7510-007	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water	
	C00-035	10/03/00	7510-007	C		11/02/00	11/25/00	MCM	Carbon 14 in Water	
			7510-007	I		11/21/00	11/25/00	MCM	Iodine 129 in Water	
			7510-007	RA		11/07/00	11/25/00	MCM	Radium 226 in Water	
			7510-007	TC		11/17/00	11/25/00	MCM	Technetium 99 in Water	
			7510-007	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water	
Spike (R010015-02)		R010015-08	7510-008	C		11/02/00	11/25/00	MCM	Carbon 14 in Water	
HANFORD SITE	WATER	09/29/00								
	C00-035	10/03/00								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
82B/82	C00-035	Gross Beta in Water	900.0_ALPHA_BETA_GPC	4			1	1	1	7
88A/88	C00-035	Gross Alpha in Water	900.0_ALPHA_BETA_GPC	4			1	1	1	7
C	C00-035	Carbon 14 in Water	C14_CHEM_LSC	4			1	1	1	8
I	C00-035	Iodine 129 in Water	I129_SEP_LEPS_GS	4			1	1	1	7
RA	C00-035	Radium 226 in Water	903.1_RA226_LUC	4			1	1	1	7
TC	C00-035	Technetium 99 in Water	TC99_TR_SEP_LSC	4			1	1	1	7
U_T	C00-035	Uranium, Total in Water	UTOT_KPA	4			1	1	1	7
TOTALS				28			7	7	7	50

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T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 1 0 6 4

R010015-06

Method Blank

M E T H O D B L A N K

SDG <u>7510</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010015-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7510-006</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>C00-035</u>	

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.050	1.0	2.0	3.0	U	88A
Gross Beta	12587-47-2	-0.426	2.0	3.5	4.0	U	82B
Carbon 14	14762-75-5	0	34	57	200	U	C
Technetium 99	14133-76-7	-1.43	3.0	11	15	U	TC
Radium 226	13982-63-3	0.491	0.64	1.1	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	0	0.030	0.070	0.10	U	U_T
Iodine 129	15046-84-1	2.05	3.7	<u>8.4</u>	5.0	U	I

ERDF GW MONITORING, SEPT.00

QC-BLANK 36335

METHOD BLANKS

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

R010015-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7510</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R010015-05</u> Dept sample id <u>7510-005</u>	Client/Case no <u>Hanford</u> SDG <u>H1064</u> Case no <u>TRC-SBB-207925</u> Client sample id <u>Lab Control Sample</u> Material/Matrix <u>WATER</u> SAF No <u>C00-035</u>
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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	117	7.8	1.6	3.0		88A	122	4.9	96	69-131	70-130
Gross Beta	124	5.5	2.8	4.0	X	82B	121	4.8	102	75-125	70-130
Carbon 14	12600	140	55	200		C	12800	510	98	84-116	80-120
Technetium 99	1170	35	11	15		TC	1130	45	104	83-117	80-120
Radium 226	133	5.5	1.3	2.0		RA	148	5.9	90	89-111	80-120
Total Uranium (ug/L)	83.5	12	<u>0.70</u>	0.10		U_T	82.5	3.3	101	74-126	80-120
Iodine 129	248	7.5	<u>8.9</u>	5.0		I	250	10	99	89-111	80-120

ERDF GW MONITORING, SEPT.00

QC-LCS 36334

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

R010015-07

B10382

DUPLICATE

SDG <u>7510</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>TRC-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R010015-07</u>	Lab sample id <u>R010015-02</u>	Client sample id <u>B10382</u>
Dept sample id <u>7510-007</u>	Dept sample id <u>7510-002</u>	Location/Matrix <u>HANFORD SITE</u> <u>WATER</u>
	Received <u>10/03/00</u>	Collected <u>09/29/00 10:31</u>
		Custody/SAF No <u>C00-035-3</u> <u>C00-035</u>

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	1.53	1.3	1.9	3.0	U	88A	0.500	1.2	2.1	U	-	
Gross Beta	50.7	3.8	2.9	4.0		82B	49.2	3.9	3.5		3	36
Carbon 14	44.6	25	40	200	J	C	13.7	22	37	U	106	173
Technetium 99	85.8	9.7	11	15		TC	80.1	7.9	12		7	31
Radium 226	0.357	0.69	1.2	2.0	U	RA	1.99	0.96	1.3	J	139	152
Total Uranium (ug/L)	3.13	0.53	<u>0.70</u>	0.10		U_T	3.19	0.54	<u>0.70</u>		2	41
Iodine 129	11.8	2.6	<u>5.4</u>	5.0		I	11.0	2.5	<u>5.4</u>		7	49

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QC-DUP#2 36336

DUPLICATES

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

R010015-08

B10382

MATRIX SPIKE

SDG <u>7510</u> Contact <u>Melissa C. Mannion</u> MATRIX SPIKE Lab sample id <u>R010015-08</u> Dept sample id <u>7510-008</u>	ORIGINAL Lab sample id <u>R010015-02</u> Dept sample id <u>7510-002</u> Received <u>10/03/00</u>	Client/Case no <u>Hanford</u> <u>SDG H1064</u> Case no <u>TRC-SBB-207925</u> Client sample id <u>B10382</u> Location/Matrix <u>HANFORD SITE</u> <u>WATER</u> Collected <u>09/29/00 10:31</u> Custody/SAF No <u>C00-035-3</u> <u>C00-035</u>
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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 % (TOTAL)	LMTS LIMITS	PROTOCOL
Carbon 14	24800	250	74	200	C	25600	1000	13.7	22	97	84-116	60-140

ERDF GW MONITORING, SEPT.00

QC-MS#2 36337

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1064

R010015-01

B10398

D A T A S H E E T

SDG <u>7510</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010015-01</u>	Client sample id <u>B10398</u>	
Dept sample id <u>7510-001</u>	Location/Matrix <u>HANFORD SITE</u> <u>WATER</u>	
Received <u>10/03/00</u>	Collected <u>09/29/00 09:51</u>	
	Custody/SAF No <u>C00-035-1</u> <u>C00-035</u>	

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.340	1.3	2.4	3.0	U	88A
Gross Beta	12587-47-2	27.6	3.0	3.1	4.0		82B
Carbon 14	14762-75-5	35.2	23	38	200	U	C
Technetium 99	14133-76-7	35.6	5.6	11	15		TC
Radium 226	13982-63-3	0.827	0.84	1.4	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	3.27	0.54	<u>0.70</u>	0.10		U_T
Iodine 129	15046-84-1	0.307	1.8	4.1	5.0	U	I

ERDF GW MONITORING, SEPT.00

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T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1064

R010015-02

B103B2

D A T A S H E E T

SDG <u>7510</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010015-02</u>	Client sample id <u>B103B2</u>	
Dept sample id <u>7510-002</u>	Location/Matrix <u>HANFORD SITE</u> <u>WATER</u>	
Received <u>10/03/00</u>	Collected <u>09/29/00 10:31</u>	
	Custody/SAF No <u>C00-035-3</u> <u>C00-035</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.500	1.2	2.1	3.0	U	88A
Gross Beta	12587-47-2	49.2	3.9	3.5	4.0		82B
Carbon 14	14762-75-5	13.7	22	37	200	U	C
Technetium 99	14133-76-7	80.1	7.9	12	15		TC
Radium 226	13982-63-3	1.99	0.96	1.3	2.0	J	RA
Total Uranium (ug/L)	7440-61-1	3.19	0.54	<u>0.70</u>	0.10		U_T
Iodine 129	15046-84-1	11.0	2.5	<u>5.4</u>	5.0		I

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DATA SHEETS

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Version <u>3.06</u>
Report date <u>11/25/00</u>

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1064

R010015-03

B103B6

D A T A S H E E T

SDG <u>7510</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010015-03</u>	Client sample id <u>B103B6</u>	
Dept sample id <u>7510-003</u>	Location/Matrix <u>HANFORD SITE</u> <u>WATER</u>	
Received <u>10/03/00</u>	Collected <u>09/29/00 11:22</u>	
	Custody/SAF No <u>C00-035-5</u> <u>C00-035</u>	

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.266	1.1	2.1	3.0	U	88A
Gross Beta	12587-47-2	49.9	3.8	2.9	4.0		82B
Carbon 14	14762-75-5	3.75	22	38	200	U	C
Technetium 99	14133-76-7	85.6	7.8	11	15		TC
Radium 226	13982-63-3	0.182	0.69	1.3	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	3.17	0.53	<u>0.70</u>	0.10		U_T
Iodine 129	15046-84-1	13.1	2.3	5.0	5.0		I

ERDF GW MONITORING, SEPT.00

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>11/25/00</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1064

R010015-04

B103B8

DATA SHEET

SDG <u>7510</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010015-04</u>	Client sample id <u>B103B8</u>	
Dept sample id <u>7510-004</u>	Location/Matrix <u>HANFORD SITE</u>	<u>WATER</u>
Received <u>10/03/00</u>	Collected <u>09/29/00 11:22</u>	
	Custody/SAF No <u>C00-035-6</u>	<u>C00-035</u>

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	1.28	1.7	2.9	3.0	U	88A
Gross Beta	12587-47-2	47.4	3.8	3.2	4.0		82B
Carbon 14	14762-75-5	4.81	24	40	200	U	C
Technetium 99	14133-76-7	76.5	7.4	11	15		TC
Radium 226	13982-63-3	-0.261	0.60	1.2	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	3.62	0.59	<u>0.70</u>	0.10		U_T
Iodine 129	15046-84-1	13.9	3.9	<u>8.3</u>	5.0		I

ERDF GW MONITORING, SEPT.00

DATA SHEETS

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Protocol <u>Hanford</u>
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
TECHNETIUM 99 IN WATER
BETA COUNTING

Test IC Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Technetium 99 PLANCHET
Preparation batch 6955-127				
B10398	R010015-01			7510-001 35.6
B10382	R010015-02			7510-002 80.1
B10386	R010015-03			7510-003 85.6
B10388	R010015-04			7510-004 76.5
BLK (QC ID=36335)	R010015-06			7510-006 U
LCS (QC ID=36334)	R010015-05			7510-005 ok
Duplicate (R010015-02)	R010015-07			7510-007 ok

Nominal values and limits from method RDLs (pCi/L) 15
ERDF GW MONITORING, SEPT.00

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 127																
B10398	R010015-01			11	0.0500			93		50			49	11/08/00	11/17	GRB-202
B10382	R010015-02			12	0.0500			88		50			52	11/08/00	11/20	GRB-230
B10386	R010015-03			11	0.0500			97		50			53	11/08/00	11/21	GRB-203
B10388	R010015-04			11	0.0500			97		50			52	11/08/00	11/20	GRB-232
BLK (QC ID=36335)	R010015-06			11	0.0500			94		50				11/08/00	11/20	GRB-230
LCS (QC ID=36334)	R010015-05			11	0.0500			95		50				11/08/00	11/21	GRB-207
Duplicate (R010015-02)	R010015-07			11	0.0500			92		50			49	11/08/00	11/17	GRB-222
(QC ID=36336)																

Nominal values and limits from method 15 0.0500 20-105 50 180

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY, cont.
TECHNETIUM 99 IN WATER
BETA COUNTING

Test TC Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-541	Technetium-99 Purification (Water) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES $\pm$ 2 SD	MDA	<u>11</u>	$\pm$	<u>0.76</u>
FOR 7 SAMPLES	YIELD	<u>94</u>	$\pm$	<u>6</u>

METHOD SUMMARIES

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Test 82B Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB	RAW	SUF-	1: Gross	2: Sum, Beta	RESULT RATIO (%)			
	SAMPLE ID	TEST	FIX			PLANCHET	Beta	Emitters	2÷1
Preparation batch 6955-127									
B10398	R010015-01	82		7510-001	27.6				
B10382	R010015-02	82		7510-002	49.2	1.99		4	2
B10386	R010015-03	82		7510-003	49.9				
B10388	R010015-04	82		7510-004	47.4				
BLK (QC ID=36335)	R010015-06	82		7510-006	U				
LCS (QC ID=36334)	R010015-05	82		7510-005	ok	X			
Duplicate (R010015-02)	R010015-07	82		7510-007	ok				
Nominal values and limits from method			RDLs (pCi/L)		4.0				
ERDF GW MONITORING, SEPT.00						Average	4		

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	ANAL- YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 15.0 % Reference Lab Notebook 6955 pg. 127															
B10398	R010015-01	82		3.1	0.200			46	100			28	10/27/00	10/27	GRB-111
B10382	R010015-02	82		3.5	0.200			54	100			28	10/27/00	10/27	GRB-112
B10386	R010015-03	82		2.9	0.200			57	100			28	10/27/00	10/27	GRB-113
B10388	R010015-04	82		3.2	0.200			55	100			28	10/27/00	10/27	GRB-114
BLK (QC ID=36335)	R010015-06	82		3.5	0.200			25	100				10/27/00	10/27	GRB-116
LCS (QC ID=36334)	R010015-05	82		2.8	0.200			26	100				10/27/00	10/27	GRB-115
Duplicate (R010015-02)	R010015-07	82		2.9	0.200			52	100			29	10/27/00	10/28	GRB-113
(QC ID=36336)															
Nominal values and limits from method				4.0	0.200			5-250	100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD MDA 3.1 ± 0.57
FOR 7 SAMPLES RESIDUE 45 ± 28

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Test 88A Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
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Preparation batch 6955-127

B10398	R010015-01	88		7510-001	U
B10382	R010015-02	88		7510-002	U
B10386	R010015-03	88		7510-003	U
B10388	R010015-04	88		7510-004	U
BLK (QC ID=36335)	R010015-06	88		7510-006	U
LCS (QC ID=36334)	R010015-05	88		7510-005	ok
Duplicate (R010015-02)	R010015-07	88		7510-007	- U

Nominal values and limits from method RDLs (pCi/L) 3.0
ERDF GW MONITORING, SEPT.00

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	ANAL- YZED	DETECTOR
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Preparation batch 6955-127 2σ prep error 20.0 % Reference Lab Notebook 6955 pg. 127

B10398	R010015-01	88		2.4	0.200			48	100			32	10/31/00	10/31	GRB-110
B10382	R010015-02	88		2.1	0.200			54	100			32	10/31/00	10/31	GRB-111
B10386	R010015-03	88		2.1	0.200			57	100			32	10/31/00	10/31	GRB-112
B10388	R010015-04	88		2.9	0.200			58	100			32	10/31/00	10/31	GRB-113
BLK (QC ID=36335)	R010015-06	88		2.0	0.200			24	100				10/31/00	10/31	GRB-115
LCS (QC ID=36334)	R010015-05	88		1.6	0.200			25	100				10/31/00	10/31	GRB-114
Duplicate (R010015-02)	R010015-07	88		1.9	0.200			55	100			32	10/31/00	10/31	GRB-116
				(QC ID=36336)											

Nominal values and limits from method 3.0 0.200 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD MDA 2.1 ± 0.82
FOR 7 SAMPLES RESIDUE 46 ± 30

METHOD SUMMARIES

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Lab id TMANC
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
IODINE 129 IN WATER
GAMMA SPECTROSCOPY

Test I Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Iodine 129
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Preparation batch 6955-127

B10398	R010015-01	7510-001	U		
B10382	R010015-02	7510-002	11.0		
B10386	R010015-03	7510-003	13.1		
B10388	R010015-04	7510-004	13.9		
BLK (QC ID=36336)	R010015-06	7510-006	U		
LCS (QC ID=36335)	R010015-05	7510-005	ok		
Duplicate (R010015-02)	R010015-07	7510-007	ok		

Nominal values and limits from method RDLs (pCi/L) 5.0
ERDF GW MONITORING, SEPT.00

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	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 6955-127 2σ prep error 5.0 % Reference Lab Notebook 6955 pg. 127

B10398	R010015-01	4.1	0.250	92	959	40	10/31/00	11/08	XSPEC-014							
B10382	R010015-02	5.4	0.250	92	577	35	10/31/00	11/03	XSPEC-016							
B10386	R010015-03	5.0	0.250	94	957	40	10/31/00	11/08	XSPEC-016							
B10388	R010015-04	8.3	0.250	97	209	35	10/31/00	11/03	XSPEC-016							
BLK (QC ID=36336)	R010015-06	8.4	0.250	89	204		10/31/00	11/03	XSPEC-016							
LCS (QC ID=36335)	R010015-05	8.9	0.250	95	206		10/31/00	11/20	XSPEC-016							
Duplicate (R010015-02)	R010015-07	5.4	0.250	91	502	53	10/31/00	11/21	XSPEC-016							
	(QC ID=36337)															

Nominal values and limits from method 5.0 0.250 20-105 200 100 180

PROCEDURES REFERENCE I129_SEP_LEPS_GS
CP-024 Iodine-129, Sample Dissolution, rev 1
CP-560 Iodine-129 Purification, rev 2

AVERAGES ± 2 SD MDA 6.5 ± 3.9
FOR 7 SAMPLES YIELD 93 ± 5

METHOD SUMMARIES

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Lab id TMANC
Protocol Hanford
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Form DVD-CMS
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Report date 11/25/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY

Test U T Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Uranium (ug/L)
Preparation batch 6955-127					
B10398	R010015-01			7510-001	3.27
B10382	R010015-02			7510-002	3.19
B10386	R010015-03			7510-003	3.17
B10388	R010015-04			7510-004	3.62
BLK (QC ID=36335)	R010015-06			7510-006	U
LCS (QC ID=36334)	R010015-05			7510-005	ok
Duplicate (R010015-02)	R010015-07			7510-007	ok
Nominal values and limits from method					
ERDF GW MONITORING, SEPT.00				RDLs (ug/L)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA ug/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 9.0 % Reference Lab Notebook 6955 pg. 127															
B10398	R010015-01			0.70	0.0200								34	11/02/00	KPA-001
B10382	R010015-02			0.70	0.0200								34	11/02/00	KPA-001
B10386	R010015-03			0.70	0.0200								34	11/02/00	KPA-001
B10388	R010015-04			0.70	0.0200								34	11/02/00	KPA-001
BLK (QC ID=36335)	R010015-06			0.070	0.0200									11/02/00	KPA-001
LCS (QC ID=36334)	R010015-05			0.70	0.0200									11/02/00	KPA-001
Duplicate (R010015-02)	R010015-07			0.70	0.0200								34	11/02/00	KPA-001
(QC ID=36336)															
Nominal values and limits from method				0.10	0.0200								180		

PROCEDURES REFERENCE UTOT_KPA
CP-040 Environmental Water Dissolution, rev 3
CP-044 Sample Preparation for Total Uranium by Kinetic
 Phosphorimetry, rev 2
CP-928 Total Uranium by Kinetic Phosphorimetry, rev 2

AVERAGES ± 2 SD MDA 0.61 ± 0.48
FOR 7 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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Version Ver 1.0
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H1064

Test C Matrix WATER

SDG 7510

Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford

Contract TRC-SBB-207925

Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Carbon 14
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Preparation batch 6955-127

B10398	R010015-01		7510-001	U
B103B2	R010015-02		7510-002	U
B103B6	R010015-03		7510-003	U
B103B8	R010015-04		7510-004	U
BLK (QC ID=36335)	R010015-06		7510-006	U
LCS (QC ID=36334)	R010015-05		7510-005	ok
Duplicate (R010015-02)	R010015-07		7510-007	ok J
Spike (R010015-02)	R010015-08		7510-008	ok

Nominal values and limits from method RDLs (pCi/L) 200

ERDF GW MONITORING, SEPT.00

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 6955-127 2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 127

B10398	R010015-01		38	0.0300				100	100			34	11/01/00	11/02	LSC-005
B103B2	R010015-02		37	0.0300				100	100			34	11/01/00	11/02	LSC-005
B103B6	R010015-03		38	0.0300				100	100			34	11/01/00	11/02	LSC-005
B103B8	R010015-04		40	0.0300				100	100			34	11/01/00	11/02	LSC-005
BLK (QC ID=36335)	R010015-06		57	0.0200				100	100				11/01/00	11/02	LSC-005
LCS (QC ID=36334)	R010015-05		55	0.0200				100	100				11/01/00	11/02	LSC-005
Duplicate (R010015-02)	R010015-07		40	0.0300				100	100			34	11/01/00	11/02	LSC-005
(QC ID=36336)															
Spike (R010015-02)	R010015-08		74	0.0200				100	60			34	11/01/00	11/02	LSC-005
(QC ID=36337)															

Nominal values and limits from method 200 0.0200 50 180

PROCEDURES	REFERENCE	C14_CHEM_LSC
	CP-241	Carbon-14 in Aqueous Samples, rev 2

AVERAGES ± 2 SD	MDA 47 ± 27
FOR 8 SAMPLES	YIELD 100 ± 0

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

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Version 3.06

Report date 11/25/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
RADIUM 226 IN WATER
RADON COUNTING

Test RA Matrix WATER
SDG 7510
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Radium 226
Preparation batch 6955-127					
B10398	R010015-01			7510-001	U
B10382	R010015-02			7510-002	1.99 J
B10386	R010015-03			7510-003	U
B10388	R010015-04			7510-004	U
BLK (QC ID=36335)	R010015-06			7510-006	U
LCS (QC ID=36334)	R010015-05			7510-005	ok
Duplicate (R010015-02)	R010015-07			7510-007	ok U

Nominal values and limits from method RDLs (pCi/L) 2.0
ERDF GW MONITORING, SEPT.00

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 5.0 % Reference Lab Notebook 6955 pg. 127																
B10398	R010015-01			1.4	0.0400			100		100		39	11/07/00	11/07		RN-009
B10382	R010015-02			1.3	0.0400			100		100		39	11/07/00	11/07		RN-012
B10386	R010015-03			1.3	0.0400			100		100		39	11/07/00	11/07		RN-014
B10388	R010015-04			1.2	0.0400			100		100		39	11/07/00	11/07		RN-015
BLK (QC ID=36335)	R010015-06			1.1	0.0400			100		100			11/07/00	11/07		RN-009
LCS (QC ID=36334)	R010015-05			1.3	0.0400			100		100			11/07/00	11/07		RN-016
Duplicate (R010015-02)	R010015-07			1.2	0.0400			100		100		39	11/07/00	11/07		RN-012
(QC ID=36336)																
Nominal values and limits from method				2.0	0.0400			20-105		100		180				

PROCEDURES REFERENCE 903.1_RA226_LUC
CP-701 Radium-226 in Water and Dissolved Samples, rev 2

AVERAGES ± 2 SD MDA 1.3 ± 0.20
FOR 7 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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Report date 11/25/00

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-1

Page 1 of 2

Collected By R.T SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN FAX
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code	
Project Title ERDE GW MONITORING, SEPTEMBER 2000	Logbook No. WILSAWS-H37	Ice Chest No. 68 5M1558	Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No.	4235 7953 9470
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

** **

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B10397 (F)		W	9/29/00	0951	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B10398		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B10398		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B10398		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B10398		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B10398		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B10398		W			1x20-mL P	Activity Scan	None
✓ B10398		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B10398		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B10398		W			1x1000-mL G/P	Carbon-14	None
✓ B10398		W			4x1000-mL G/P	Iodine-129	None
✓ B10398		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

FAXED
10/4/00

Relinquished By R.T SICKLE	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00 10:42	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fed Ex			Date/Time 10-3-00 10:42	Received By JR Corso			Date/Time 10-3-00	
Relinquished By			Date/Time	Received By			Date/Time	
Relinquished By			Date/Time	Received By			Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time	

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-3

Page 1 of 2

Collector KB HULSE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN FAX
SAF No. C00-035	Sampling Origin HANFORD SITE H1064 (7510)	Purchase Order/Charge Code	
Project Title ERDF GW MONITORING, SEPTEMBER 2000	Logbook No. WM-SAWS-H35	Ice Chest No. 62 5ML 549	Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9507	
Protocol CERCLA	Date Turnaround 45 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

** **

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B1 (F)		W	9-29-00	1031	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B2		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B2		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B2		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B2		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B2		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B2		W			1x20-mL P	Activity Scan	None
✓ B103B2		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B2		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B2		W			1x1000-mL G/P	Carbon-14	None
✓ B103B2		W			4x1000-mL G/P	Iodine-129	None
✓ B103B2		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

FAXED
10/4/00

Relinquished By KB HULSE	Print <i>KB Hulse</i>	Sign <i>KB Hulse</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-2-00	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge W1 = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By Fed Ex			Date/Time 10-3-00 10:44	Received By JA Corso			Date/Time 10-3-00 10:44		
Relinquished By			Date/Time	Received By			Date/Time		
Relinquished By			Date/Time	Received By			Date/Time		
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By	Date/Time

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-5	
						Page <u>1</u> of <u>2</u>	
Collector R.T SICKLE		Contact/Requester JH KESSNER		Telephone No. (509) 375-4688		MSIN FAX	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code H1064 (7510)			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. WH-SAW-1137		Ice Chest No. 67 SML1/GWS10-7		Temp.	
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 4235 7953 9492			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B5 (F)		W	9/21/00	1122	1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B6		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B6		W			1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B6		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B6		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B6		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B6		W			1x20-mL P	Activity Scan	None
✓ B103B6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B6		W			1x1000-mL G/P	Carbon-14	None
✓ B103B6		W			4x1000-mL G/P	Iodine-129	None
✓ B103B6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By R.T SICKLE		Print Sign		Date/Time 10-2-00		Received By Fed Ex		Print Sign		Date/Time 10-2-00		Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By Fed Ex				Date/Time 10-3-00		Received By JR Edwards		Print Sign		Date/Time 10-3-00			
Relinquished By				Date/Time		Received By				Date/Time			
Relinquished By				Date/Time		Received By				Date/Time			

FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time	
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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-6

Page 1 of 2

Collector R.T. SICKLE	Contact/Requester JH KESSNER H106A (7510)	Telephone No. (509) 375-4688	MSIN FAX
SAF No. C00-035	Sampling Origin HANEFORD SITE	Purchase Order/Charge Code	
Project Title ERDF GW MONITORING, SEPTEMBER 2000	Logbook No. WM SHWS-437	Ice Chest No. 69 GWS107	Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No.	4235 7953 9481
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

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SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B103B7 (F)		W	9/29/00	11:22	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B8		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B103B8		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B8		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B103B8		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B103B8		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B8		W			1x20-mL P	Activity Scan	None
B103B8		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B103B8		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B103B8		W			1x1000-mL G/P	Carbon-14	None
B103B8		W			1x1000-mL G/P	Iodine-129	None
B103B8		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

FAXED
10/4/00

Relinquished By R.T. SICKLE	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00/1400	Received By Fed Ex	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By Fed Ex			Date/Time 10-3-00 10:00	Received By JR Kovso			Date/Time 10-3-00 10:00		
Relinquished By			Date/Time	Received By			Date/Time		
Relinquished By			Date/Time	Received By			Date/Time		
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By	Date/Time

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C00-035-6

Page 2 of 2**FAX**[illegible]

PAID
10/4/08

Relinquished By **R.T SICKLE** Print *[Signature]* Sign *[Signature]* Date/Time **10-2-00/1400**

Received By	Print	Sign	Date/Time
	Fed Ex		10-2-00

Relinquished By	<i>1/10/99</i>	Date/Time
<i>Fel Ex</i>	<i>10-3-00</i>	<i>10:00</i>

Received By NR Brown Date/Time 10-3-00 10:00

Relinquished By _____ Date/Time _____

Received By _____ Date/Time _____

Relinquished By _____ Date/Time _____

Received By	Date/Time
-------------	-----------

Matrix *

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

Date/Time

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford (PNNL) Date: 10-3-00

Ice chest # or description	<u>SML 550</u>					
Thermometer: time in	<u>10:30</u>					
Thermometer: time out	<u>11:00</u>					
Thermometer reading	<u>6°C</u>					
Thermometer number	<u>2132</u>					
Correction factor	<u>—</u>					
Actual temperature*	<u>—</u>					
Custody seals on ice chest intact?	<u>Yes</u>					
Custody seals dated?	<u>Yes</u>					
Custody seals signed?	<u>Yes</u>					
Custody seals on samples?	<u>Yes</u>					
Ice chest scanned for activity?	<u>Yes</u>					

* Temperature is in degrees centigrade.

Technician: AC Corso

Comments: _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bectel Hanford (PNNL) Date: 10-7-02

Ice chest # or description	SML 544					
Thermometer: time in	13:10					
Thermometer: time out	13:50					
Thermometer reading	6°C					
Thermometer number	2132					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	Yes					
Custody seals dated?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: J. Cross

Comments: _____

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Bechtel Hanford (PNNL)</u>	Date/Time received <u>10-3-00 10:00</u>		
CoC No. <u>LOD-035-1</u>			
Container I.D. No. <u>SML-5513</u>	Requested TAT (Days) <u>45</u>	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: <u>2</u>			
7. Number of containers per sample: _____ (Or see CoC <u>2</u>)			
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: <u>All the labels are wet</u>			
13. Was P.M. notified of any anomalies? Yes [] No [] Date _____			
14. Received by <u>[Signature]</u> Date: <u>10-3-00</u> Time: <u>10:00</u>			

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7511
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract IKC-SBB-207925
Case no SDG H1064

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B103B0	HANFORD SITE	WATER		R010016-01	C00-035	C00-035-2	09/29/00 07:45
B103B4	HANFORD SITE	WATER		R010016-02	C00-035	C00-035-4	09/29/00 07:30
Method Blank		WATER		R010015-06	C00-035		
Lab Control Sample		WATER		R010015-05	C00-035		
Duplicate (R010016-01)	HANFORD SITE	WATER		R010016-03	C00-035		09/29/00 07:45

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

QC SUMMARY

SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7510		Method Blank	WATER						R010015-06	7510-006
		Lab Control Sample	WATER						R010015-05	7510-005
7511	C00-035-2	B103B0	WATER				10/03/00	4	R010016-01	7511-001
	C00-035-4	B103B4	WATER				10/03/00	4	R010016-02	7511-002
		Duplicate (R010016-01)	WATER				10/03/00	4	R010016-03	7511-003

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7511
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Beta Counting											
TC	WATER	Technetium 99 in Water	6955-127	10.0	2			1	1	1/1	
Gas Proportional Counting											
82B	WATER	Gross Beta in Water	6955-127	15.0	2			1	1	1/1	X
88A	WATER	Gross Alpha in Water	6955-127	20.0	2			1	1	1/1	
Gamma Spectroscopy											
I	WATER	Iodine 129 in Water	6955-127	5.0	2			1	1	1/1	
Kinetic Phosphorimetry											
U_T	WATER	Uranium, Total in Water	6955-127	9.0	2			1	1	1/1	
Liquid Scintillation Counting											
C	WATER	Carbon 14 in Water	6955-127	10.0	2			1	1	1/1	
Radon Counting											
RA	WATER	Radium 226 in Water	6955-127	5.0	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.

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

SDG 7511
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

CLIENT SAMPLE ID		MATRIX	LAB SAMPLE ID		TEST	SUF-		REVIEWED	BY	METHOD
LOCATION	SAF No		COLLECTED	PLANCHET		FIX	ANALYZED			
CUSTODY			RECEIVED							
B103B0			R010016-01	7511-001	82B/82		10/28/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7511-001	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
C00-035-2	C00-035		10/03/00	7511-001	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7511-001	I		11/21/00	12/04/00	MCM	Iodine 129 in Water
				7511-001	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7511-001	TC		11/20/00	11/25/00	MCM	Technetium 99 in Water
				7511-001	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
B103B4			R010016-02	7511-002	82B/82		10/28/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7511-002	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
C00-035-4	C00-035		10/03/00	7511-002	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7511-002	I		11/23/00	12/04/00	MCM	Iodine 129 in Water
				7511-002	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7511-002	TC		11/17/00	11/25/00	MCM	Technetium 99 in Water
				7511-002	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
Method Blank			R010015-06	7510-006	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
		WATER		7510-006	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
	C00-035			7510-006	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-006	I		11/03/00	11/25/00	MCM	Iodine 129 in Water
				7510-006	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-006	TC		11/20/00	11/25/00	MCM	Technetium 99 in Water
				7510-006	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
Lab Control Sample			R010015-05	7510-005	82B/82		10/27/00	11/25/00	MCM	Gross Beta in Water
		WATER		7510-005	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
	C00-035			7510-005	C		11/02/00	11/25/00	MCM	Carbon 14 in Water
				7510-005	I		11/20/00	11/25/00	MCM	Iodine 129 in Water
				7510-005	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7510-005	TC		11/21/00	11/25/00	MCM	Technetium 99 in Water
				7510-005	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water
Duplicate (R010016-01)			R010016-03	7511-003	82B/82		10/28/00	11/25/00	MCM	Gross Beta in Water
HANFORD SITE		WATER	09/29/00	7511-003	88A/88		10/31/00	11/25/00	MCM	Gross Alpha in Water
	C00-035		10/03/00	7511-003	C		11/03/00	11/25/00	MCM	Carbon 14 in Water
				7511-003	I		11/24/00	12/04/00	MCM	Iodine 129 in Water
				7511-003	RA		11/07/00	11/25/00	MCM	Radium 226 in Water
				7511-003	TC		11/20/00	11/25/00	MCM	Technetium 99 in Water
				7511-003	U_T		11/02/00	11/25/00	MCM	Uranium, Total in Water

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

WORK SUMMARY, cont.

SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1064

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
82B/82	C00-035	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
88A/88	C00-035	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
C	C00-035	Carbon 14 in Water	C14_CHEM_LSC	2			1	1	1		5
I	C00-035	Iodine 129 in Water	I129_SEP_LEPS_GS	2			1	1	1		5
RA	C00-035	Radium 226 in Water	903.1_RA226_LUC	2			1	1	1		5
TC	C00-035	Technetium 99 in Water	TC99_TR_SEP_LSC	2			1	1	1		5
U_T	C00-035	Uranium, Total in Water	UTOT_KPA	2			1	1	1		5
TOTALS				14			7	7	7		35

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 12/04/00

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1064

R010015-06

Method Blank

METHOD BLANK

SDG 7511
Contact Melissa C. Marnion

Client/Case no Hanford SDG H1064
Contract TRC-SBB-207925

Lab sample id R010015-06
Dept sample id 7510-006

Client sample id Method Blank
Material/Matrix WATER
SAF No C00-035

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.050	1.0	2.0	3.0	U	88A
Gross Beta	12587-47-2	-0.426	2.0	3.5	4.0	U	82B
Carbon 14	14762-75-5	0	34	57	200	U	C
Technetium 99	14133-76-7	-1.43	3.0	11	15	U	TC
Radium 226	13982-63-3	0.491	0.64	1.1	2.0	U	RA
Total Uranium (ug/g)	7440-61-1	0	0.030	0.070	0.10	U	U_T
Iodine 129	15046-84-1	2.05	3.7	<u>8.4</u>	5.0	U	I

ERDF GW MONITORING, SEPT.00

QC-BLANK 36335

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 12/04/00

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7511	Client/Case no Hanford	SDG H1064
Contact Melissa C. Mannion	Case no TRC-SBB-207925	
Lab sample id R010015-05	Client sample id Lab Control Sample	
Dept sample id 7510-005	Material/Matrix	WATER
	SAF No C00-035	

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	117	7.8	1.6	3.0		88A	122	4.9	96	69-131	70-130
Gross Beta	124	5.5	2.8	4.0	X	82B	121	4.8	102	75-125	70-130
Carbon 14	12600	140	55	200		C	12800	510	98	84-116	80-120
Technetium 99	1170	35	11	15		TC	1130	45	104	83-117	80-120
Radium 226	133	5.5	1.3	2.0		RA	148	5.9	90	89-111	80-120
Total Uranium (ug/g)	83.5	12	<u>0.70</u>	0.10		U_T	82.5	3.3	101	74-126	80-120
Iodine 129	248	7.5	<u>8.9</u>	5.0		I	250	10	99	89-111	80-120

ERDF GW MONITORING, SEPT.00

QC-LCS 36334

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

R010016-03

B103B0

DUPLICATE

SDG <u>7511</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>TRC-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R010016-03</u>	Lab sample id <u>R010016-01</u>	Client sample id <u>B103B0</u>
Dept sample id <u>7511-003</u>	Dept sample id <u>7511-001</u>	Location/Matrix <u>HANFORD SITE</u> <u>WATER</u>
	Received <u>10/03/00</u>	Collected <u>09/29/00 07:45</u>
		Custody/SAF No <u>C00-035-2</u> <u>C00-035</u>

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 TOT	PROT LIMIT
Gross Alpha	-0.348	0.48	1.3	3.0	U	88A	-0.184	0.76	1.6	U	-		
Gross Beta	0.852	2.1	3.4	4.0	U	82B	-0.248	1.8	3.1	U	-		
Carbon 14	11.7	23	38	200	U	C	-11.7	23	38	U	-		
Technetium 99	1.87	3.8	12	15	U	TC	-1.69	2.9	11	U	-		
Radium 226	0.935	0.79	1.2	2.0	U	RA	-0.303	0.66	1.3	U	-		
Total Uranium (ug/g)	0	0.030	0.070	0.10	U	U_T	0	0.030	0.070	U	-		
Iodine 129	1.84	3.0	5.0	5.0	U	I	-3.08	4.5	10	U	-		

ERDF GW MONITORING, SEPT.00

QC-DUP#1 36198

DUPLICATES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 12/04/00

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1064

R010016-01

B103B0

DATA SHEET

SDG <u>7511</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010016-01</u>	Client sample id <u>B103B0</u>	
Dept sample id <u>7511-001</u>	Location/Matrix <u>HANFORD SITE</u>	<u>WATER</u>
Received <u>10/03/00</u>	Collected <u>09/29/00 07:45</u>	
	Custody/SAF No <u>C00-035-2</u>	<u>C00-035</u>

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.184	0.76	1.6	3.0	U	88A
Gross Beta	12587-47-2	-0.248	1.8	3.1	4.0	U	82B
Carbon 14	14762-75-5	-11.7	23	38	200	U	C
Technetium 99	14133-76-7	-1.69	2.9	11	15	U	TC
Radium 226	13982-63-3	-0.303	0.66	1.3	2.0	U	RA
Total Uranium (ug/g)	7440-61-1	0	0.030	0.070	0.10	U	U_T
Iodine 129	15046-84-1	-3.08	4.5	<u>10</u>	5.0	U	I

ERDF GW MONITORING, SEPT.00

DATA SHEETS

Page 1

SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/04/00</u>

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1064

R010016-02

B103B4

D A T A S H E E T

SDG <u>7511</u>	Client/Case no <u>Hanford</u>	SDG <u>H1064</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010016-02</u>	Client sample id <u>B103B4</u>	
Dept sample id <u>7511-002</u>	Location/Matrix <u>HANFORD SITE</u> <u>WATER</u>	
Received <u>10/03/00</u>	Collected <u>09/29/00 07:30</u>	
	Custody/SAF No <u>C00-035-4</u> <u>C00-035</u>	

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.091	0.60	1.3	3.0	U	88A
Gross Beta	12587-47-2	0.139	1.6	2.7	4.0	U	82B
Carbon 14	14762-75-5	6.46	22	37	200	U	C
Technetium 99	14133-76-7	-0.588	3.8	13	15	U	TC
Radium 226	13982-63-3	-0.279	0.67	1.4	2.0	U	RA
Total Uranium (ug/g)	7440-61-1	0	0.030	0.070	0.10	U	U_T
Iodine 129	15046-84-1	<u>-3.09</u>	3.0	<u>5.1</u>	5.0	U	I

ERDF GW MONITORING, SEPT.00

DATA SHEETS

Page 2

SUMMARY DATA SECTION

Page 12

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/04/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
TECHNETIUM 99 IN WATER
BETA COUNTING

Test TC Matrix WATER
SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Technetium 99 PLANCHET
Preparation batch 6955-127				
B10380	R010016-01		7511-001	U
B10384	R010016-02		7511-002	U
BLK (QC ID=36335)	R010015-06		7510-006	U
LCS (QC ID=36334)	R010015-05		7510-005	ok
Duplicate (R010016-01)	R010016-03		7511-003	- U

Nominal values and limits from method RDLs (pCi/L) 15
ERDF GW MONITORING, SEPT.00

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 127																
B10380	R010016-01			11	0.0500			96		50		52	11/08/00	11/20		GRB-232
B10384	R010016-02			13	0.0500			80		50		49	11/08/00	11/17		GRB-224
BLK (QC ID=36335)	R010015-06			11	0.0500			94		50			11/08/00	11/20		GRB-230
LCS (QC ID=36334)	R010015-05			11	0.0500			95		50			11/08/00	11/21		GRB-207
Duplicate (R010016-01)	R010016-03			12	0.0500			87		50		52	11/08/00	11/20		GRB-230
(QC ID=36198)																

Nominal values and limits from method 15 0.0500 20-105 50 180

PROCEDURES REFERENCE TC99_TR_SEP_LSC
CP-021 Preparation of Tc-99m Tracer, rev 0
CP-002 Q.C. Preparation, rev 2
CP-003 Tracing, rev 2
CP-541 Technetium-99 Purification (Water) by Extraction Chromatography, rev 0
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 12 ± 1.8
FOR 5 SAMPLES YIELD 90 ± 14

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 2/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

Test 82B Matrix WATER
SDG 7511
Contact Melissa C. Mannion

METHOD SUMMARY
GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Gross Beta	2: Sum, Beta Emitters	RESULT RATIO (%)	
							2-1	2-2
Preparation batch 6955-127								
B103B0	R010016-01	82		7511-001	U			
B103B4	R010016-02	82		7511-002	U			
BLK (QC ID=36335)	R010015-06	82		7510-006	U			
LCS (QC ID=36334)	R010015-05	82		7510-005	ok	X		
Duplicate (R010016-01)	R010016-03	82		7511-003	-	U		
Nominal values and limits from method								
				RDLs (pCi/L)	4.0			
ERDF GW MONITORING, SEPT.00							Average	

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 15.0 % Reference Lab Notebook 6955 pg. 127																
B103B0	R010016-01	82		3.1	0.200			<u>1</u>		100			29	10/27/00	10/28	GRB-114
B103B4	R010016-02	82		2.7	0.200			<u>0</u>		100			29	10/27/00	10/28	GRB-115
BLK (QC ID=36335)	R010015-06	82		3.5	0.200			25		100				10/27/00	10/27	GRB-116
LCS (QC ID=36334)	R010015-05	82		2.8	0.200			26		100				10/27/00	10/27	GRB-115
Duplicate (R010016-01) (QC ID=36198)	R010016-03	82		3.4	0.200			<u>1</u>		100			29	10/27/00	10/28	GRB-116
Nominal values and limits from method																
				4.0	0.200			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHA_BETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD MDA 3.1 ± 0.71
FOR 5 SAMPLES RESIDUE 11 ± 27

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Test 88A Matrix WATER
SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
Preparation batch 6955-127					
B103B0	R010016-01	88		7511-001	U
B103B4	R010016-02	88		7511-002	U
BLK (QC ID=36335)	R010015-06	88		7510-006	U
LCS (QC ID=36334)	R010015-05	88		7510-005	ok
Duplicate (R010016-01)	R010016-03	88		7511-003	- U

Nominal values and limits from method RDLs (pCi/L) 3.0
ERDF GW MONITORING, SEPT.00

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6955-127 2σ prep error 20.0 % Reference Lab Notebook 6955 pg. 127																
B103B0	R010016-01	88		1.6	0.200			<u>0</u>		100			32	10/31/00	10/31	GRB-110
B103B4	R010016-02	88		1.3	0.200			<u>0</u>		100			32	10/31/00	10/31	GRB-111
BLK (QC ID=36335)	R010015-06	88		2.0	0.200			24		100				10/31/00	10/31	GRB-115
LCS (QC ID=36334)	R010015-05	88		1.6	0.200			25		100				10/31/00	10/31	GRB-114
Duplicate (R010016-01) (QC ID=36198)	R010016-03	88		1.3	0.200			<u>1</u>		100			32	10/31/00	10/31	GRB-112

Nominal values and limits from method 3.0 0.200 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD MDA 1.6 ± 0.58
FOR 5 SAMPLES RESIDUE 10 ± 26

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
IODINE 129 IN WATER
GAMMA SPECTROSCOPY

Test I Matrix WATER
SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Iodine 129
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Preparation batch 6955-127

B103B0	R010016-01	7511-001	U		
B103B4	R010016-02	7511-002	U		
BLK (QC ID=36336)	R010015-06	7510-006	U		
LCS (QC ID=36335)	R010015-05	7510-005	ok		
Duplicate (R010016-01)	R010016-03	7511-003	-	U	

Nominal values and limits from method RDLs (pCi/L) 5.0
ERDF GW MONITORING, SEPT.00

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	ANAL- YZED	DETECTOR
------------------	------------------	-------------	-------------	--------------	-----------	-------------	---------------	------------	----------	--------------	-------------	--------------	--------------	---------------	----------

Preparation batch 6955-127 2σ prep error 5.0 % Reference Lab Notebook 6955 pg. 127

B103B0	R010016-01	<u>10</u>	0.250	85	255	53	10/31/00	11/21	XSPEC-016
B103B4	R010016-02	<u>5.1</u>	0.250	87	200	55	10/31/00	11/23	LSC-004
BLK (QC ID=36336)	R010015-06	<u>8.4</u>	0.250	89	204		10/31/00	11/03	XSPEC-016
LCS (QC ID=36335)	R010015-05	<u>8.9</u>	0.250	95	206		10/31/00	11/20	XSPEC-016
Duplicate (R010016-01) (QC ID=36198)	R010016-03	5.0	0.250	89	200	56	10/31/00	11/24	LSC-004

Nominal values and limits from method 5.0 0.250 20-105 200 100 180

PROCEDURES REFERENCE I129_SEP_LEPS_GS
CP-024 Iodine-129, Sample Dissolution, rev 1
CP-560 Iodine-129 Purification, rev 2

AVERAGES ± 2 SD MDA 7.5 ± 4.6
FOR 5 SAMPLES YIELD 89 ± 7

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY

Test U T Matrix WATER
SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG_H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX PLANCHET	Total Uranium (ug/g)
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Preparation batch 6955-127

B103B0	R010016-01	7511-001	U
B103B4	R010016-02	7511-002	U
BLK (QC ID=36335)	R010015-06	7510-006	U
LCS (QC ID=36334)	R010015-05	7510-005	ok
Duplicate (R010016-01)	R010016-03	7511-003	- U

Nominal values and limits from method RDLs (pCi/L) 0.10
ERDF GW MONITORING, SEPT.00

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
------------------	------------------	----------------------	--------------	-----------	-------------	---------------	------------	----------	--------------	-------------	--------------	--------------	---------------	----------

Preparation batch 6955-127 2σ prep error 9.0 % Reference Lab Notebook 6955 pg. 127

B103B0	R010016-01		0.070	0.0200								34	11/02/00	11/02 KPA-001
B103B4	R010016-02		0.070	0.0200								34	11/02/00	11/02 KPA-001
BLK (QC ID=36335)	R010015-06		0.070	0.0200									11/02/00	11/02 KPA-001
LCS (QC ID=36334)	R010015-05		<u>0.70</u>	0.0200									11/02/00	11/02 KPA-001
Duplicate (R010016-01)	R010016-03		0.070	0.0200								34	11/02/00	11/02 KPA-001
(QC ID=36198)														

Nominal values and limits from method 0.10 0.0200 180

PROCEDURES	REFERENCE	UTOT_KPA
CP-040	Environmental Water Dissolution, rev 3	
CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 2	
CP-928	Total Uranium by Kinetic Phosphorimetry, rev 2	

AVERAGES ± 2 SD	MDA <u>0.20</u> ± <u>0.56</u>
FOR 5 SAMPLES	YIELD _____ ± _____

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-CMS</u>
Version <u>3.06</u>
Report date <u>12/04/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

Test C Matrix WATER
SDG 7511
Contact Melissa C. Mannion

METHOD SUMMARY
CARBON 14 IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Carbon 14
------------------	------------------	-----------------	------------------	-----------

Preparation batch 6955-127

B10380	R010016-01	7511-001	U	
B10384	R010016-02	7511-002	U	
BLK (QC ID=36335)	R010015-06	7510-006	U	
LCS (QC ID=36334)	R010015-05	7510-005	ok	
Duplicate (R010016-01)	R010016-03	7511-003	- U	

Nominal values and limits from method RDLs (pCi/L) 200
ERDF GW MONITORING, SEPT.00

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
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Preparation batch 6955-127 2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 127

B10380	R010016-01	38	0.0300	100	100	34	11/01/00	11/02	LSC-005
B10384	R010016-02	37	0.0300	100	100	34	11/01/00	11/02	LSC-005
BLK (QC ID=36335)	R010015-06	57	0.0200	100	100		11/01/00	11/02	LSC-005
LCS (QC ID=36334)	R010015-05	55	0.0200	100	100		11/01/00	11/02	LSC-005
Duplicate (R010016-01)	R010016-03	38	0.0300	100	100	35	11/01/00	11/03	LSC-005
(QC ID=36198)									

Nominal values and limits from method 200 0.0200 50 180

PROCEDURES REFERENCE C14_CHEM_LSC
CP-241 Carbon-14 in Aqueous Samples, rev 2

AVERAGES ± 2 SD MDA 45 ± 20
FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 6

SUMMARY DATA SECTION

Page 18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/04/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1064

METHOD SUMMARY
RADIUM 226 IN WATER
RADON COUNTING

Test RA Matrix WATER
SDG 7511
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1064

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Radium 226
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Preparation batch 6955-127

B103B0	R010016-01	7511-001	U	
B103B4	R010016-02	7511-002	U	
BLK (QC ID=36335)	R010015-06	7510-006	U	
LCS (QC ID=36334)	R010015-05	7510-005	ok	
Duplicate (R010016-01)	R010016-03	7511-003	-	U

Nominal values and limits from method RDLs (pCi/L) 2.0
ERDF GW MONITORING, SEPT.00

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 6955-127 2σ prep error 5.0 % Reference Lab Notebook 6955 pg. 127

B103B0	R010016-01	1.3	0.0400	100	100	39	11/07/00	11/07	RN-014
B103B4	R010016-02	1.4	0.0400	100	100	39	11/07/00	11/07	RN-015
BLK (QC ID=36335)	R010015-06	1.1	0.0400	100	100		11/07/00	11/07	RN-009
LCS (QC ID=36334)	R010015-05	1.3	0.0400	100	100		11/07/00	11/07	RN-016
Duplicate (R010016-01)	R010016-03	1.2	0.0400	100	100	39	11/07/00	11/07	RN-016
(QC ID=36198)									

Nominal values and limits from method 2.0 0.0400 20-105 100 180

PROCEDURES REFERENCE 903.1_RA226_LUC
CP-701 Radium-226 in Water and Dissolved Samples, rev 2

AVERAGES ± 2 SD MDA 1.3 ± 0.23
FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 7

SUMMARY DATA SECTION

Page 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/04/00

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-2	
		Page 1 of 2					
Collector R.T SICKLE			Contact/Requester JH KESSNER		Telephone No. MSIN FAX (509) 375-4688		
SAF No. C00-035			Sampling Origin HANFORD SITE		Purchase Order/Charge Code		
Project Title ERDE GW MONITORING, SEPTEMBER 2000			Logbook No. WMSAW5 H37		Ice Chest No. 5ML 548 Temp.		
Shipped To (Lab) TMA/RECRA			Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 42357953 9460		
Protocol CERCLA			Data Turnaround 45 Days		Offsite Property No.		
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐			
				FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			
Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10399 (F) ✓		W	4/24/00	0745	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B0 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B103B0 ✓		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B0 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B103B0 ✓		W			1x250-mL G/P	Alkalinity - 310:1 *	Cool 4C
B103B0 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B0 ✓		W			1x20-mL P	Activity Scan ✓	None
B103B0 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B103B0 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B103B0 ✓		W			1x1000-mL G/P	Carbon-14 ✓	None
B103B0 ✓		W			4x1000-mL G/P	Iodine-129	None
B103B0 ✓		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2
Relinquished By R.T SICKLE			Print <i>[Signature]</i>		Date/Time 10-2-00 1400		Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By <i>Fed Ex</i>			Date/Time 10-3-00 10:10		Received By <i>[Signature]</i>		
Relinquished By			Date/Time		Received By <i>[Signature]</i>		
Relinquished By			Date/Time		Received By		
Relinquished By			Date/Time		Received By		
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By Date/Time	

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-4	
		Page 1 of 2					
Collector KB HULSE		Contact/Requester JH KESSNER		Telephone No. MSIN (509) 375-4688		FAX	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. WM-SAWS-H35		Ice Chest No. 20		Temp. 5ml 462	
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 4235 7953 9518			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS * *				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B103B3 (F) ✓		W	9-29-00	0730	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B4 ✓		W	↓	↓	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B103B4 ✓		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B4 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B103B4 ✓		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B103B4 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B4 ✓		W			1x20-mL P	Activity Scan ✓ <i>stays here</i>	None
B103B4 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B103B4 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B103B4 ✓		W			1x1000-mL G/P	Carbon-14	None
B103B4 ✓		W			4x1000-mL G/P	Iodine-129	None
B103B4 ✓		W		2x1000-mL G/P	Radium -226	HNO3 to pH <2	

Relinquished By KB HULSE		Print Sign		Date/Time 10-2-00 1400		Received By Fed Ex		Print Sign		Date/Time 10-02-00		Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By Fed. EXPRESS				Date/Time 10-03-00 10:15am		Received By E. Leguina		Date/Time 10-03-00					
Relinquished By				Date/Time		Received By		Date/Time					
Relinquished By				Date/Time		Received By		Date/Time					

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C00-035-4

Page 2 of 2

FAX

[illegible]

Relinquished By
KB HULSE

Print

Sign

Date/Time

Received By

Print

Sign

Date/Time

Matrix *

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bectel Hanford (PNNL) Date: 10-3-04

Ice chest # or description	<u>SML</u> <u>548</u>					
Thermometer: time in	<u>3:10</u>					
Thermometer: time out	<u>3:50</u>					
Thermometer reading	<u>4°C</u>					
Thermometer number	<u>2132</u>					
Correction factor	<u>—</u>					
Actual temperature*	<u>—</u>					
Custody seals on ice chest intact?	<u>Yes</u>					
Custody seals dated?	<u>Yes</u>					
Custody seals signed?	<u>Yes</u>					
Custody seals on samples?	<u>Yes</u>					
Ice chest scanned for activity?	<u>Yes</u>					

* Temperature is in degrees centigrade.

Technician: Chris Leggett

Comments: _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford (PNNL) Date: 10-03-00

Ice chest # or description	SML462					
Thermometer: time in	15:15					
Thermometer: time out	15:45					
Thermometer reading	4.5°C					
Thermometer number	6536					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	yes					
Custody seals dated?	yes					
Custody seals signed?	yes					
Custody seals on samples?	yes					
Ice chest scanned for activity?	yes					

* Temperature is in degrees centigrade.

Technician: W. Brown

Comments: _____

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client:	BECHTEL HANFORD INC, (PNNL)	Date/Time received	10-03-00 10: AM
CoC No.	C00-035-2		
Container I.D. No.	SML 548	Requested TAT (Days)	75 P.O. Received Yes [] No [4]
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: 2		
7.	Number of containers per sample: PLS check (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. Legu Date: 10-03-00 Time: 10: AM		

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10398						
ALKALINITY	002	W	00LAK059	09/29/00	10/10/00	10/10/00
ALKALINITY	002 REP	W	00LAK059	09/29/00	10/10/00	10/10/00
BROMIDE BY IC	002	W	00LAC061	09/29/00	10/13/00	10/13/00
BROMIDE BY IC	002 REP	W	00LAC061	09/29/00	10/13/00	10/13/00
BROMIDE BY IC	002 MS	W	00LAC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	002	W	00LIC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	002 REP	W	00LIC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	002 MS	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	002	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	002 REP	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	002 MS	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	002	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	002 REP	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	002 MS	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	002	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	002 REP	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	002 MS	W	00LIC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	002	W	00LAC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	002 REP	W	00LAC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	002 MS	W	00LAC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	002	W	00LIC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	002 REP	W	00LIC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	002 MS	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE NITRITE	002	W	00LN3053	09/29/00	10/19/00	10/19/00
NITRATE NITRITE	002 REP	W	00LN3053	09/29/00	10/19/00	10/19/00
NITRATE NITRITE	002 MS	W	00LN3053	09/29/00	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	002	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL DISSOLVED SOLI	002 REP	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	002	W	00LX126	09/29/00	10/26/00	10/26/00
TOTAL ORGANIC HALIDE	002 REP	W	00LX126	09/29/00	10/26/00	10/26/00
TOTAL ORGANIC HALIDE	002 MS	W	00L&S126	09/29/00	10/26/00	10/27/00

B103B0

ALKALINITY	004	W	00LAK059	09/29/00	10/10/00	10/10/00
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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BROMIDE BY IC	004	W	00LAC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	004	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	004	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	004	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	004	W	00LIC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	004	W	00LAC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	004	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE NITRITE	004	W	00LN3053	09/29/00	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	004	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	004	W	00L&S126	09/29/00	10/26/00	10/27/00

B103B2

ALKALINITY	006	W	00LAK059	09/29/00	10/10/00	10/10/00
BROMIDE BY IC	006	W	00LAC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	006	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	006	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	006	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	006	W	00LIC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	006	W	00LAC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	006	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE NITRITE	006	W	00LN3053	09/29/00	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	006	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	006	W	00LX126	09/29/00	10/26/00	10/27/00

B103B4

ALKALINITY	008	W	00LAK059	09/29/00	10/10/00	10/10/00
BROMIDE BY IC	008	W	00LAC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	008	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	008	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	008	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	008	W	00LIC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	008	W	00LAC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	008	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE NITRITE	008	W	00LN3053	09/29/00	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	008	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	008	W	00LX126	09/29/00	10/26/00	10/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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B103B6

ALKALINITY	010	W	00LAK059	09/29/00	10/10/00	10/10/00
BROMIDE BY IC	010	W	00LAC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	010	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	010	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	010	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	010	W	00LIC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	010	W	00LAC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	010	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE NITRITE	010	W	00LN3053	09/29/00	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	010	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	010	W	00L&S126	09/29/00	10/26/00	10/27/00

B103B8

ALKALINITY	012	W	00LAK059	09/29/00	10/10/00	10/10/00
BROMIDE BY IC	012	W	00LAC061	09/29/00	10/13/00	10/13/00
CHLORIDE BY IC	012	W	00LIC061	09/29/00	10/13/00	10/13/00
FLUORIDE BY IC	012	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRITE BY IC	012	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE BY IC	012	W	00LIC061	09/29/00	10/13/00	10/13/00
PHOSPHATE BY IC	012	W	00LAC061	09/29/00	10/13/00	10/13/00
SULFATE BY IC	012	W	00LIC061	09/29/00	10/13/00	10/13/00
NITRATE NITRITE	012	W	00LN3053	09/29/00	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	012	W	00LSA144	09/29/00	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	012	W	00LX126	09/29/00	10/26/00	10/27/00

LAB QC:

ALKALINITY	MB1	W	00LAK059	N/A	10/10/00	10/10/00
ALKALINITY	MB1 BS	W	00LAK059	N/A	10/10/00	10/10/00
ALKALINITY	MB1 BSD	W	00LAK059	N/A	10/10/00	10/10/00
BROMIDE BY IC	MB1	W	00LAC061	N/A	10/13/00	10/13/00
BROMIDE BY IC	MB1 BS	W	00LAC061	N/A	10/13/00	10/13/00
CHLORIDE BY IC	MB1	W	00LIC061	N/A	10/13/00	10/13/00
CHLORIDE BY IC	MB1 BS	W	00LIC061	N/A	10/13/00	10/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	MB1	W	00LIC061	N/A	10/13/00	10/13/00
FLUORIDE BY IC	MB1 BS	W	00LIC061	N/A	10/13/00	10/13/00
NITRITE BY IC	MB1	W	00LIC061	N/A	10/13/00	10/13/00
NITRITE BY IC	MB1 BS	W	00LIC061	N/A	10/13/00	10/13/00
NITRATE BY IC	MB1	W	00LIC061	N/A	10/13/00	10/13/00
NITRATE BY IC	MB1 BS	W	00LIC061	N/A	10/13/00	10/13/00
PHOSPHATE BY IC	MB1	W	00LAC061	N/A	10/13/00	10/13/00
PHOSPHATE BY IC	MB1 BS	W	00LAC061	N/A	10/13/00	10/13/00
SULFATE BY IC	MB1	W	00LIC061	N/A	10/13/00	10/13/00
SULFATE BY IC	MB1 BS	W	00LIC061	N/A	10/13/00	10/13/00
NITRATE NITRITE	MB1	W	00LN3053	N/A	10/19/00	10/19/00
NITRATE NITRITE	MB1 BS	W	00LN3053	N/A	10/19/00	10/19/00
TOTAL DISSOLVED SOLI	MB1	W	00LSA144	N/A	10/10/00	10/11/00
TOTAL DISSOLVED SOLI	MB1 BS	W	00LSA144	N/A	10/10/00	10/11/00
TOTAL DISSOLVED SOLI	MB1 BSD	W	00LSA144	N/A	10/10/00	10/11/00
TOTAL ORGANIC HALIDE	LCS BS	W	00LX126	N/A	10/26/00	10/26/00
TOTAL ORGANIC HALIDE	MB1	W	00LX126	N/A	10/26/00	10/26/00

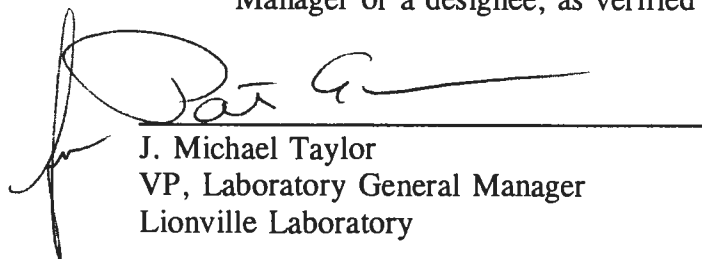
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD C00-035 H1064
RFW# : 0010L894

W.O. # : 10985-001-001-9999-00
Date Received: 10-06-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 6 water samples.
2. The samples were 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 met with the exception of Nitrate, Nitrite, Phosphate, Total Dissolved Solids and Total Suspended Solids which were received past hold.
4. The cooler temperatures were recorded on the chain-of-custody.
5. The method blanks were within method criteria with the exception of 00LAK059-MB1 for Alkalinity which was above the reporting limit.
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.
8. The replicate analyses were within the 20% 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 data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-3-00
Date

njp\10-894

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 28 pages.

005

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
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	
Chlorine, 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	☐ 351.4		
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	☐ 376.2 ☐ 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:	

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.

L-WI-034/D-6/99

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/01/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-00f-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-002	B10398	Alkalinity	160	MG/L	2.0	1.0
		Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	18.4	MG/L	1.2	5.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	1.2 u	MG/L	1.2	5.0
		Nitrate by IC	19	MG/L	1.2	5.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	30.5	MG/L	1.2	5.0
		Nitrate Nitrite	4.7	MG/L	0.20	10.0
		Total Dissolved Solids	270	MG/L	5.0	1.0
		Total Organic Halides	206	UG/L	15.0	1.0
-004	B103B0	Alkalinity	23.8	MG/L	2.0	1.0
		Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.50	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
		Nitrate Nitrite	0.020u	MG/L	0.020	1.0
		Total Dissolved Solids	9.0	MG/L	5.0	1.0
		Total Organic Halides	15.0 u	UG/L	15.0	1.0
-006	B103B2	Alkalinity	137	MG/L	2.0	1.0
		Bromide by IC	1.2 u	MG/L	1.2	5.0
		Chloride by IC	25.7	MG/L	1.2	5.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	1.2 u	MG/L	1.2	5.0
		Nitrate by IC	78	MG/L	5.0	20
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	31.7	MG/L	1.2	5.0
		Nitrate Nitrite	19.1	MG/L	0.50	25.0
		Total Dissolved Solids	340	MG/L	5.0	1.0
		Total Organic Halides	271	UG/L	15.0	1.0
-008	B103B4	Alkalinity	19.8	MG/L	2.0	1.0
		Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/01/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-008	B103B4	Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
		Nitrate Nitrite	0.020u	MG/L	0.020	1.0
		Total Dissolved Solids	180	MG/L	5.0	1.0
		Total Organic Halides	15.0 u	UG/L	15.0	1.0
-010	B103B6	Alkalinity	119	MG/L	2.0	1.0
		Bromide by IC	1.2 u	MG/L	1.2	5.0
		Chloride by IC	21.4	MG/L	1.2	5.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	1.2 u	MG/L	1.2	5.0
		Nitrate by IC	96	MG/L	5.0	20
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	35.9	MG/L	1.2	5.0
		Nitrate Nitrite	24.6	MG/L	0.50	25.0
		Total Dissolved Solids	520	MG/L	5.0	1.0
		Total Organic Halides	181	UG/L	15.0	1.0
-012	B103B8	Alkalinity	123	MG/L	2.0	1.0
		Bromide by IC	1.2 u	MG/L	1.2	5.0
		Chloride by IC	22.4	MG/L	1.2	5.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	1.2 u	MG/L	1.2	5.0
		Nitrate by IC	42	MG/L	5.0	20
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	37.6	MG/L	1.2	5.0
		Nitrate Nitrite	23.2	MG/L	0.50	25.0
		Total Dissolved Solids	550	MG/L	5.0	1.0
		Total Organic Halides	180	UG/L	15.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/01/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK10	00LAK059-MB1	Alkalinity	4.0	MG/L	2.0	1.0
BLANK10	00LAC061-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	00LIC061-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	00LN3053-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	00LSA144-MB1	Total Dissolved Solids	5.0 u	MG/L	5.0	1.0
BLANK1	00LX126-MB1	Total Organic Halides	12.0 u	UG/L	12.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/01/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-002	B10398	Bromide by IC	4.2	0.00	5.0	84.3	1.0
		Chloride by IC	42.9	18.4	25.0	98.0	5.0
		Fluoride by IC	11.2	0.25	10.0	110.0	1.0
		Nitrite by IC	25	1.2 u	25	99.8	5.0
		Nitrate by IC	45	19	25	104.8	5.0
		Phosphate by IC	4.8	0.25u	5.0	96.0	1.0
		Sulfate by IC	77.4	30.5	50.0	93.8	10.0
		Nitrate Nitrite	9.4	4.7	5.0	94.2	10.0
		Total Organic Halides	265	206	62.5	94.3	1.0
BLANK10	00LAK059-MB1	Alkalinity	98.0	4.0	100	94.0	1.0
		Alkalinity MSD	99.0	4.0	100	95.0	1.0
BLANK10	00LAC061-MB1	Bromide by IC	4.9	0.25u	5.0	97.7	1.0
		Phosphate by IC	5.1	0.25u	5.0	102.5	1.0
BLANK10	00LIC061-MB1	Chloride by IC	4.7	0.25u	5.0	93.8	1.0
		Fluoride by IC	10.9	0.50u	10.0	109.2	1.0
		Nitrite by IC	4.8	0.25u	5.0	95.5	1.0
		Nitrate by IC	4.9	0.25u	5.0	98.3	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.9	1.0
BLANK10	00LN3053-MB1	Nitrate Nitrite	0.52	0.02u	0.50	103.2	1.0
BLANK10	00LSA144-MB1	Total Dissolved Solids	100	5.0 u	100	104.0	1.0
		Total Dissolved Solids	99	5.0 u	100	99.0	1.0
LCSS	00LX126-LCS	Total Organic Halides	46.5	12.0 u	50.0	93.1	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/01/00

CLIENT: TNUHANFORD C00-035 H1064
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	00LAK059-MB1	Alkalinity	94.0	95.0	1.0
BLANK10	00LSA144-MB1	Total Dissolved Solids	104.0	99.0	4.9

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/01/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
=====	=====	=====	=====	=====	=====	=====
-002REP	B10398	Alkalinity	160	162	1.2	1.0
		Bromide by IC	0.25u	0.25u	NC	1.0
		Chloride by IC	18.4	18.7	2.0	5.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	1.2 u	1.2 u	NC	5.0
		Nitrate by IC	19	18	0.54	5.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	30.5	27.6	10.2	5.0
		Nitrate Nitrite	4.7	4.5	3.0	10.0
		Total Dissolved Solids	270	300	9.5	1.0
		Total Organic Halides	206	209	1.2	1.0

RECRA LabNet Use Only
0010L894

Custody Transfer Record/Lab Work Request

Page 1 of 2
FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client <u>Thu-Hanford COO-035</u>	Refrigerator # <u>AC</u>	<u>1</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>1</u>
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid <u>3v</u>	<u>IP</u>	<u>IP</u>	<u>IP</u>	<u>IP</u>	<u>IP</u>	<u>IP</u>
Project # <u>10985-001-001-9999-00</u>		Solid _____						
Project Contact/Phone # _____	Volume	Liquid <u>40</u>	<u>500</u>	<u>500</u>	<u>250</u>	<u>500</u>	<u>500</u>	<u>500</u>
RECRA Project Manager <u>AS</u>		Solid _____						
QC Spec <u>Del Std</u> TAT <u>30 day</u>	Preservatives	<u>HCl</u>	<u>HNO3</u>	<u>-</u>	<u>-</u>	<u>H2SO4</u>	<u>-</u>	<u>H2SO4</u>
Date Rec'd <u>10-6-00</u> Date Due <u>11-5-00</u>	ANALYSES REQUESTED →	ORGANIC	INORG					
Account # _____		VOA	BNA	Pest/PCB	Herb	Metal	CN	

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - Liquids EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only										
			MS	MSD				HC	PC	AT	TO	IC	TK	IN	TD	IT	IT	IT
	001	B10397 (F)			W	9-29-00	0951											
	002	98	✓	✓			1	✓				✓	✓	✓	✓	✓	✓	✓
	003	99 (F)					0745											
	004	B0					1	✓				✓	✓	✓	✓	✓	✓	✓
	005	B1 (F)					1031					✓						
	006	B2					1	✓				✓	✓	✓	✓	✓	✓	✓
	007	B3 (F)					0730					✓						
	008	B4					1	✓				✓	✓	✓	✓	✓	✓	✓
	009	B5 (F)					1122					✓						
	010	B6					1	✓				✓	✓	✓	✓	✓	✓	✓

Special Instructions: <u>Saf COO-035</u>				DATE/REVISIONS: <u>IC ①</u> 1. <u>Cl, Br, FI, NO2, NO3, SO4, PO4</u>				RECRA LabNet Use Only							
								Samples were: 1) Shipped <u>✓</u> or Hand Delivered _____ 2) Ambient or <u>Chilled</u> 3) Received in Good Condition <u>Y</u> or N 4) Labels Indicate Property Preserved <u>Y</u> or N 5) Received Within Holding Times <u>Y</u> or N				COC Tape was: 1) Present on Outer Package <u>Y</u> or N 2) Unbroken on Outer Package <u>Y</u> or N 3) Present on Sample <u>Y</u> or N 4) Unbroken on Sample <u>Y</u> or N COC Record Present Upon Sample Rec't <u>Y</u> or N Cooler Temp. <u>82.1</u> °C			
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N				NOTES:			
<u>Frd Ex</u>	<u>TKoppel</u>	<u>10-6-00</u>	<u>09:51</u>	COMPOSITE WASTE	ORIGINAL			<u>965</u> <u>9505</u> <u>055</u>				<u>82.1</u> <u>82148983.0191</u> <u>5.89</u>			

RECRA LabNet Use Only

0010L894

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



015

Client <u>Tru-Hanford COO-035</u>		Refrigerator # <u>1</u>		A-C		D		E		F		G		H		I	
Est. Final Proj. Sampling Date _____		#/Type Container		Liquid	<u>3v</u>	IP		IP		IP		IP		IP		IP	
Project # _____		Volume		Liquid	<u>40</u>	500		500		250		500		500		500	
Project Contact/Phone # _____		Preservatives		<u>WC</u>		<u>WC</u>		<u>WC</u>		<u>WC</u>		<u>WC</u>		<u>WC</u>		<u>WC</u>	
RECRA Project Manager <u>QC</u>		ANALYSES REQUESTED		ORGANIC		INORG		Metal		CN							
Date Rec'd _____		Date Due _____		VOA		BNA		Pest/PCB		Herb							
Account # _____																	
MATRIX CODES:		Lab ID		Client ID/Description		Matrix QC Chosen (✓)		Matrix		Date Collected		Time Collected					
S - Soil						MS MSD											
SE - Sediment																	
SO - Solid																	
SL - Sludge																	
W - Water																	
O - Oil																	
A - Air																	
DS - Drum																	
Solids																	
DL - Drum																	
Liquids																	
EP/TCLP																	
Leachate																	
WI - Wipe																	
X - Other																	
F - Fish																	

Special Instructions:

DATE/REVISIONS:

- _____
- _____
- _____
- _____
- _____
- _____

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. _____ °C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FedEx	TKoppel	10/6/00	0925				

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

10/04/00 12:50:43

WORK ID: SAF C00-035 SDG H1064

RCVD: 10/03/00 DUE: 11/17/00

KEEP: 11/17/01 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	B10398 (F)	RECRA	DISPOS E012
02A	B10398	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
02B	B10398 MS	RECRA	E012 E122 E153 E211 E260 E265 E285
02C	B10398 DUP	RECRA	E012 E122 E153 E211 E260 E265 E285
03A	B103B1	RECRA	DISPOS E012
04A	B103B2	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
05A	B103B5 (F)	RECRA	DISPOS E012
06A	B103B6	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
07A	B103B7 (F)	RECRA	DISPOS E012
08A	B103B8	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
09A	B10399 (F)	RECRA	DISPOS E012
10A	B103B0	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
11A	B103B3 (F)	RECRA	DISPOS E012
12A	B103B4	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
<i>FRD Ex</i>	<i>10-5-00</i>	<i>RECRA</i>	<i>10-5-00</i>	<i>Thoppe</i>	<i>10-6-00</i>

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-1

Chem SDG HI064

Page 1 of 1

Collected By R.T. SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN FAX
SAF No. C00-035	Sample Origin HANFORD SITE	Purchase Order/Charge Code	
Project Title ERDE GW MONITORING, SEPTEMBER 2000	Logbook No. SAWS-H37	Ice Chest No. 511558	Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9470	
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

** **

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B10397 (F)	✓	W	9/29/00	0951	1x500-mL G/P	ICP Metals - 6010A (SW-848)	HNO3 to pH <2
✓ B10398	✓	W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B10398	✓	W			1x500-mL G/P	ICP Metals - 6010A (SW-848)	HNO3 to pH <2
✓ B10398	✓	W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B10398	✓	W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B10398	✓	W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B10398		W			1x20-mL P	Activity Scan	None
✓ B10398		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B10398		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B10398		W			1x1000-mL G/P	Carbon-14	None
✓ B10398		W			4x1000-mL G/P	Iodine-129	None
✓ B10398		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By R.T. SICKLE	Print R.T. SICKLE	Signature <i>[Signature]</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print Fed Ex	Signature <i>[Signature]</i>	Date/Time 10-2-00	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solid DL = Drum Liqui T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By Fed Ex			Date/Time 10-3-00 10:00	Received By HR Corso			Date/Time 10-3-00		
Relinquished By HR Corso			Date/Time 10-5-00 18:00	Received By Fed Ex			Date/Time 10-5-00		
Relinquished By Fed Ex			Date/Time 10-6-00 0925	Received By Therrell			Date/Time 10-6-00 0925		
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By	Date/Time

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-2	
		Chem SDG H1064				Page 1 of 2	
Collector R.T SICKLE		Contact/Requester JH KESSNER		Telephone No. (509) 375-4688		MSIN FAX	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code			
Project Title ERDE GW MONITORING, SEPTEMBER 2000		Logbook No. W1134105 H37		Ice Chest No. 65 SML 548		Temp.	
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 42357953 9460			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10399 (F) ✓		W	9/29/00	0745	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B0 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B103B0 ✓		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B0 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B103B0 ✓		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B103B0 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B0 ✓		W			1x20-mL P	Activity Scan ✓	None
B103B0 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B103B0 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B103B0 ✓		W			1x1000-mL G/P	Carbon-14 ✓	None
B103B0 ✓		W			4x1000-mL G/P	Iodine-129	None
B103B0 ✓		W			2x1000-mL G/P	Radium-226	HNO3 to pH <2

Relinquished By R.T SICKLE Print Sign Date/Time 10-2-00 1400		Received By Fred Ex Print Sign Date/Time 10-2-00		Matrix * S - Soil DS - Drum Solid SE - Sediment DL - Drum Liqui SO - Solid T - Tissue SL - Sludge WI - Wipe W - Water L - Liquid O - Oil V - Vegetation A - Air X - Other
Relinquished By Fred Ex Date/Time 10-3-00 10:10		Received By JP Coreo JRCover Date/Time 10-3-00 10:10		
Relinquished By JRCover Date/Time 10-5-00 13:12		Received By Fred Ex Date/Time 10-3-00		
Relinquished By Fred Ex Date/Time 10-6-00 0925		Received By Thrippel Date/Time 10-6-00 0925		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-2

Page 2 of 209

SAF No.
C00-035

Contact/Requestor
JH KESSNER

Telephone No.
(509) 375-4688

MSIN**FAX**[illegible]

Relinquished By

Priat

Date/Time

Received By

Print

Sign

Date/Time

Matrix •

R.T SICKLE

10.2.00 1400

Fed Ex

$$10 - 2 = 8$$
Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

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

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-3	
		CHEM SDC H1064				Page 1 of 2	
Collector KB HULSE		Contact/Requester JH KESSNER		Telephone No. (509) 375-4688		MSIN FAX	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. WM-SAWS-H35		Ice Chest No. 62 SML 549		Temp.	
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 4235 79539507			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B1 (F)	✓	W	9-29-00	1031	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B2	✓	W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B2	✓	W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B2	✓	W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B2	✓	W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B2	✓	W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B2		W			1x20-mL P	Activity Scan	None
✓ B103B2		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B2		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B2		W			1x1000-mL G/P	Carbon-14	None
✓ B103B2		W			4x1000-mL G/P	Iodine-129	None
✓ B103B2		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By			Received By			Matrix *		
Print	Sign	Date/Time	Print	Sign	Date/Time			
KB HULSE	<i>KB Hulse</i>	10-2-00 1400	Fed Ex	<i>Fed Ex</i>	10-2-00			
Relinquished By			Received By					
Date/Time			Date/Time					
Fed Ex		10-3-00 10:4	JA CORVO	<i>JA CORVO</i>	10-3-00 10:4			
Relinquished By			Received By					
Date/Time			Date/Time					
JA CORVO	<i>JA CORVO</i>	10-5-00 13:4	Fed Ex	<i>Fed Ex</i>	10-5-00			
Relinquished By			Received By					
Date/Time			Date/Time					
Fed Ex		10-6-00 0925	Thompson	<i>Thompson</i>	10-6-00 0925			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-4	
		<i>Chem SDG H1064</i>				Page 1 of 2	
Collector KB HULSE		Contact/Requester JH KESSNER		Telephone No. MSIN (509) 375-4688		FAX (509) 375-4688	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. WM-SAWS-H35		Ice Chest No. 20		Temp. 51.1 462	
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 4235 7953 9518			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS ** **				SPECIAL INSTRUCTIONS Hold Time FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			
				Total Activity Exemption: Yes ☒ No ☐			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B3 (F) ✓		W	9-29-00	0730	1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B4 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B4 ✓		W			1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B4 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B4 ✓		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B4 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B4 ✓		W			1x20-mL P	Activity Scan ✓ <i>Stays fresh</i>	None
✓ B103B4 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
✓ B103B4 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
✓ B103B4 ✓		W			1x1000-mL G/P	Carbon-14	None
✓ B103B4 ✓		W			4x1000-mL G/P	Iodine-129	None
✓ B103B4 ✓		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By KB HULSE <i>KB Hulse</i> 10-2-00 1400		Received By Fed Ex <i>Fed Ex</i> 10-02-00		Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fed. Express <i>Fed. Express</i> 10-03-00 10:44		Received By E. Leguina <i>E. Leguina</i> 10-03-00		
Relinquished By ARCORE <i>ARCORE</i> 10-5-00 18:44		Received By Fed Ex <i>Fed Ex</i> 10-5-00		
Relinquished By Fed Ex <i>Fed Ex</i> 10-06-00 0925		Received By Theppel <i>Theppel</i> 10-06-00 0925		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						C.O.C. # C00-035-5	
								Page 1 of 2	
Collector R.T. SICKLE		Contact/Requester JH KESSNER				Telephone No. MSIN FAX (509) 375-4688			
SAF ID C00-035		Sampling Origin HANFORD SITE				Purchase Order/Charge Code			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. W11-SAW5-H37				Ice Chest No. Temp. 67 5ML1/GWS10-7			
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE				Bill of Lading/Air Bill No. 4235 7953 9492			
Protocol CERCLA		Data Turnaround 45 Days				Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS						SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B5 (F)		W	9/21/00	1122	1x500-mL G/P	ICP Metals - 6010A (SW-846) ✓	HNO3 to pH <2
✓ B103B6		W			3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B6		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) ✓	HNO3 to pH <2
✓ B103B6		W			1x500-mL P	IC Anions - 300.0 ✓	Cool 4C
✓ B103B6		W			1x250-mL G/P	Alkalinity - 310.1 ✓	Cool 4C
✓ B103B6		W			1x500-mL G/P	NO2/NO3 - 353.1 ✓	H2SO4 to pH <2 Cool 4C
✓ B103B6		W			1x20-mL P	Activity Scan	None
✓ B103B6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B6		W			1x1000-mL G/P	Carbon-14	None
✓ B103B6		W			4x1000-mL G/P	Iodine-129	None
✓ B103B6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By Print Sign Date/Time R.T. SICKLE <i>[Signature]</i> 10-2-00 1400		Received By Print Sign Date/Time Fed Ex <i>[Signature]</i> 10-2-00 1010		Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge W1 = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Print Sign Date/Time Fed Ex <i>[Signature]</i> 10-3-00 10:42		Received By Print Sign Date/Time J.R. Edwards <i>[Signature]</i> 10-3-00		
Relinquished By Print Sign Date/Time E. Seguro <i>[Signature]</i> 10-05-00 13:00		Received By Print Sign Date/Time FED EXPRESS <i>[Signature]</i> 10-05-00		
Relinquished By Print Sign Date/Time FedEx <i>[Signature]</i> 10-06-00 0925		Received By Print Sign Date/Time Thompson <i>[Signature]</i> 10-06-00 0925		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-6	
		CHRM SDG H1064				Page 1 of 2	
Collector R.T SICKLE		Contact/Requester JH KESSNER		Telephone No. MSIN (509) 375-4688		FAX C	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. WHS-437		Ice Chest No. GWS107		Temp.	
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 4235 7953 9481			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B103B7 (F) ✓		W	9/29/00	11:25	1x500-mL G/P	ICP Metals - 8010A (SW-846) ✓	HNO3 to pH <2
B103B8 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B103B8 ✓		W			1x500-mL G/P	ICP Metals - 8010A (SW-846) ✓	HNO3 to pH <2
B103B8 ✓		W			1x500-mL P	IC Anions - 300.0 ✓	Cool 4C
B103B8 ✓		W			1x250-mL G/P	Alkalinity - 310.1 ✓	Cool 4C
B103B8 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1 ✓	H2SO4 to pH <2 Cool 4C
B103B8 ✓		W			1x20-mL P	Activity Scan	None
B103B8 ✓		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B103B8 ✓		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B103B8 ✓		W			1x1000-mL G/P	Carbon-14	None
B103B8 ✓		W			1x1000-mL G/P	Iodine-129	None
B103B8 ✓		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By R.T SICKLE		Date/Time 10-2-00/1400		Received By Fed Ex		Date/Time 10-2-00	
Relinquished By Fed Ex		Date/Time 10-3-00 10:00		Received By JR Kovso		Date/Time 10-3-00 10:00	
Relinquished By E Dogu		Date/Time 10-05-13:00		Received By FED EXPRESS		Date/Time 10-05/00	
Relinquished By Fed Ex		Date/Time 10-06-00 0925		Received By Thompson		Date/Time 10-06-00 0925	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By Date/Time
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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064



DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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B10397 (F)

SILVER, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	001	W	99L1739	09/29/00	11/27/00	11/27/00

B10398

SILVER, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
SILVER, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
SILVER, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	002	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	002 REP	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	002 MS	W	99L1739	09/29/00	11/27/00	11/27/00

B10399 (F)

SILVER, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	003	W	99L1739	09/29/00	11/27/00	11/27/00

B103B0

SILVER, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/
SILICON, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	004	W	99L1739	09/29/00	11/27/00	11/27/00

B103B1 (F)

SILVER, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COBALT, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	005	W	99L1739	09/29/00	11/27/00	11/27/00

B103B2

SILVER, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MANGANESE, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	006	W	99L1739	09/29/00	11/27/00	11/27/00

B103B3 (F)

SILVER, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	007	W	99L1739	09/29/00	11/27/00	11/27/00

B103B4

SILVER, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	008	W	99L1739	09/29/00	11/27/00	11/27/00

B103B5 (F)

SILVER, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	009	W	99L1739	09/29/00	11/27/00	11/27/00

B103B6

SILVER, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COBALT, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	010	W	99L1739	09/29/00	11/27/00	11/27/00

B103B7 (F)

SILVER, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MANGANESE, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
SELENIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	011	W	99L1739	09/29/00	11/27/00	11/27/00

B103B8

SILVER, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
ALUMINUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
ARSENIC, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
BORON, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
BARIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
BERYLLIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
CALCIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
CADMIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
COBALT, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
CHROMIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
COPPER, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
IRON, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
POTASSIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
LITHIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
MAGNESIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
MANGANESE, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
MOLYBDENUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
SODIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
NICKEL, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
PHOSPHORUS, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
LEAD, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
ANTIMONY, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
SILICON, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
STRONTIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
THALLIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
VANADIUM, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00
ZINC, TOTAL	012	W	99L1739	09/29/00	11/27/00	11/27/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
SILVER, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
ALUMINUM LABORTORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
ALUMINUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
ARSENIC LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
ARSENIC, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
BORON LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
BORON, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
BARIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
BARIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
BERYLLIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
CALCIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
CALCIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
CADMIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
CADMIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
COBALT LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
COBALT, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
CHROMIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
CHROMIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
COPPER LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
COPPER, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
IRON LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
IRON, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
POTASSIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
POTASSIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
LITHIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
LITHIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
MAGNESIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-035 H1064

DATE RECEIVED: 10/06/00

RFW LOT # :0010L894

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
MANGANESE LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
MANGANESE, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
MOLYBDENUM LABORATOR	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
MOLYBDENUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
SODIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
SODIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
NICKEL LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
NICKEL, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
PHOSPHORUS LCS	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
PHOSPHORUS, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
LEAD LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
LEAD, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
ANTIMONY LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
ANTIMONY, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
SELENIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
SELENIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
SILICON LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
SILICON, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
STRONTIUM LCS STANDA	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
STRONTIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
THALLIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
THALLIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
VANADIUM LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
VANADIUM, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00
ZINC LABORATORY	LC1 BS	W	99L1739	N/A	11/27/00	11/27/00
ZINC, TOTAL	MB1	W	99L1739	N/A	11/27/00	11/27/00

**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD C00-035
RFW#: 0010L894
SDG/SAF#: H1064/C00-035

W.O.#: 10985-001-001-9999-00
Date Received: 10-06-00

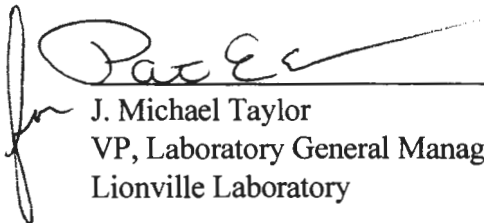
METALS CASE NARRATIVE

1. This narrative covers the analyses of 12 water samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.
10. The matrix spike (MS) recoveries for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

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 **47** pages.

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
B10398	Silicon	1000	91.5

12. The duplicate analyses for 3 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.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 J. Michael Taylor
 VP, Laboratory General Manager
 Lionville Laboratory

gmb/ml0-894

12-6-00
 Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 20102894

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: Phosphorous Method: 6010B

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	B10397 (F)	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	23.2	UG/L	22.7	1.0
		Arsenic, Total	2.6	UG/L	2.4	1.0
		Boron, Total	25.7	UG/L	2.7	1.0
		Barium, Total	38.9	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	43700	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	16.3	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	21.8 u	UG/L	21.8	1.0
		Potassium, Total	5420	UG/L	40.9	1.0
		Lithium, Total	4.8	UG/L	0.20	1.0
		Magnesium, Total	12800	UG/L	6.7	1.0
		Manganese, Total	0.77	UG/L	0.20	1.0
		Molybdenum, Total	8.7	UG/L	1.0	1.0
		Sodium, Total	19200	UG/L	4.1	1.0
		Nickel, Total	1.5	UG/L	0.90	1.0
		Phosphorus, Total	45.0	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.4	UG/L	3.3	1.0
		Silicon, Total	19600	UG/L	6.4	1.0
		Strontium, Total	190	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	27.5	UG/L	0.80	1.0
		Zinc, Total	7.4	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-002	B10398	Silver, Total	1.1	u UG/L	1.1	1.0
		Aluminum, Total	22.7	u UG/L	22.7	1.0
		Arsenic, Total	6.1	UG/L	2.4	1.0
		Boron, Total	21.1	UG/L	2.7	1.0
		Barium, Total	39.0	UG/L	0.20	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Calcium, Total	43600	UG/L	19.2	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.90	u UG/L	0.90	1.0
		Chromium, Total	15.1	UG/L	0.60	1.0
		Copper, Total	0.90	u UG/L	0.90	1.0
		Iron, Total	79.6	UG/L	21.8	1.0
		Potassium, Total	5390	UG/L	40.9	1.0
		Lithium, Total	4.7	UG/L	0.20	1.0
		Magnesium, Total	12900	UG/L	6.7	1.0
		Manganese, Total	3.5	UG/L	0.20	1.0
		Molybdenum, Total	7.8	UG/L	1.0	1.0
		Sodium, Total	19200	UG/L	4.1	1.0
		Nickel, Total	5.4	UG/L	0.90	1.0
		Phosphorus, Total	59.0	UG/L	20.0	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Antimony, Total	3.2	UG/L	2.3	1.0
		Selenium, Total	3.3	u UG/L	3.3	1.0
		Silicon, Total	19500	UG/L	6.4	1.0
		Strontium, Total	189	UG/L	0.10	1.0
		Thallium, Total	4.0	u UG/L	4.0	1.0
		Vanadium, Total	27.4	UG/L	0.80	1.0
		Zinc, Total	6.7	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
=====	=====	=====	=====	=====	=====	=====
-003	B10399 (F)	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	23.1	UG/L	22.7	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Boron, Total	9.1	UG/L	2.7	1.0
		Barium, Total	0.55	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	96.4	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	0.60 u	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	29.3	UG/L	21.8	1.0
		Potassium, Total	40.9 u	UG/L	40.9	1.0
		Lithium, Total	1.0	UG/L	0.20	1.0
		Magnesium, Total	34.5	UG/L	6.7	1.0
		Manganese, Total	0.41	UG/L	0.20	1.0
		Molybdenum, Total	1.0 u	UG/L	1.0	1.0
		Sodium, Total	64.9	UG/L	4.1	1.0
		Nickel, Total	1.0	UG/L	0.90	1.0
		Phosphorus, Total	20.0 u	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.3 u	UG/L	3.3	1.0
		Silicon, Total	6.4 u	UG/L	6.4	1.0
		Strontium, Total	0.35	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	0.80 u	UG/L	0.80	1.0
		Zinc, Total	13.7	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
=====	=====	=====	=====	=====	=====	=====
-004	B103B0	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	3.7	UG/L	2.4	1.0
		Boron, Total	2.7 u	UG/L	2.7	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	19.2 u	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	0.60 u	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	21.8 u	UG/L	21.8	1.0
		Potassium, Total	40.9 u	UG/L	40.9	1.0
		Lithium, Total	1.7	UG/L	0.20	1.0
		Magnesium, Total	9.8	UG/L	6.7	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Molybdenum, Total	1.0 u	UG/L	1.0	1.0
		Sodium, Total	9.0	UG/L	4.1	1.0
		Nickel, Total	0.90 u	UG/L	0.90	1.0
		Phosphorus, Total	20.0 u	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.3 u	UG/L	3.3	1.0
		Silicon, Total	6.4 u	UG/L	6.4	1.0
		Strontium, Total	0.10 u	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	0.80 u	UG/L	0.80	1.0
		Zinc, Total	2.3	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
=====	=====	=====	=====	=====	=====	=====
-005	B103B1 (F)	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Boron, Total	18.1	UG/L	2.7	1.0
		Barium, Total	51.5	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	53200	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	1.6	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	37.9	UG/L	21.8	1.0
		Potassium, Total	5560	UG/L	40.9	1.0
		Lithium, Total	5.1	UG/L	0.20	1.0
		Magnesium, Total	16900	UG/L	6.7	1.0
		Manganese, Total	3.1	UG/L	0.20	1.0
		Molybdenum, Total	6.9	UG/L	1.0	1.0
		Sodium, Total	20400	UG/L	4.1	1.0
		Nickel, Total	0.90 u	UG/L	0.90	1.0
		Phosphorus, Total	34.2	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.8	UG/L	2.3	1.0
		Selenium, Total	3.5	UG/L	3.3	1.0
		Silicon, Total	19700	UG/L	6.4	1.0
		Strontium, Total	235	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	15.5	UG/L	0.80	1.0
		Zinc, Total	357	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-006	B103B2	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	2.4 u	UG/L	2.4	1.0
		Boron, Total	18.1	UG/L	2.7	1.0
		Barium, Total	61.2	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	54700	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	8.3	UG/L	0.60	1.0
		Copper, Total	3.4	UG/L	0.90	1.0
		Iron, Total	14800	UG/L	21.8	1.0
		Potassium, Total	5750	UG/L	40.9	1.0
		Lithium, Total	5.4	UG/L	0.20	1.0
		Magnesium, Total	17500	UG/L	6.7	1.0
		Manganese, Total	16.8	UG/L	0.20	1.0
		Molybdenum, Total	7.5	UG/L	1.0	1.0
		Sodium, Total	20900	UG/L	4.1	1.0
		Nickel, Total	1.6	UG/L	0.90	1.0
		Phosphorus, Total	42.8	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.6	UG/L	3.3	1.0
		Silicon, Total	22300	UG/L	6.4	1.0
		Strontium, Total	244	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	26.9	UG/L	0.80	1.0
		Zinc, Total	683	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-007	B103B3 (F)	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	2.6	UG/L	2.4	1.0
		Boron, Total	2.7 u	UG/L	2.7	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	20.5	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	0.60 u	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	21.8 u	UG/L	21.8	1.0
		Potassium, Total	40.9 u	UG/L	40.9	1.0
		Lithium, Total	0.20 u	UG/L	0.20	1.0
		Magnesium, Total	10.8	UG/L	6.7	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Molybdenum, Total	1.0 u	UG/L	1.0	1.0
		Sodium, Total	11.7	UG/L	4.1	1.0
		Nickel, Total	0.90 u	UG/L	0.90	1.0
		Phosphorus, Total	20.0 u	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.3 u	UG/L	3.3	1.0
		Silicon, Total	9.7	UG/L	6.4	1.0
		Strontium, Total	0.10 u	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	0.80 u	UG/L	0.80	1.0
		Zinc, Total	3.7	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-008	B103B4	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	2.4	UG/L	2.4	1.0
		Boron, Total	2.7 u	UG/L	2.7	1.0
		Barium, Total	0.22	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	19.2 u	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	0.60 u	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	21.8 u	UG/L	21.8	1.0
		Potassium, Total	40.9 u	UG/L	40.9	1.0
		Lithium, Total	0.20 u	UG/L	0.20	1.0
		Magnesium, Total	7.3	UG/L	6.7	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Molybdenum, Total	1.0 u	UG/L	1.0	1.0
		Sodium, Total	13.7	UG/L	4.1	1.0
		Nickel, Total	0.90 u	UG/L	0.90	1.0
		Phosphorus, Total	20.0 u	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.3 u	UG/L	3.3	1.0
		Silicon, Total	6.4 u	UG/L	6.4	1.0
		Strontium, Total	0.10	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	0.98	UG/L	0.80	1.0
		Zinc, Total	6.9	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-009	B103B5 (F)	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	3.8	UG/L	2.4	1.0
		Boron, Total	21.2	UG/L	2.7	1.0
		Barium, Total	73.8	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	57400	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	4.6	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	25.0	UG/L	21.8	1.0
		Potassium, Total	5500	UG/L	40.9	1.0
		Lithium, Total	5.4	UG/L	0.20	1.0
		Magnesium, Total	19200	UG/L	6.7	1.0
		Manganese, Total	0.64	UG/L	0.20	1.0
		Molybdenum, Total	6.0	UG/L	1.0	1.0
		Sodium, Total	18900	UG/L	4.1	1.0
		Nickel, Total	4.6	UG/L	0.90	1.0
		Phosphorus, Total	37.1	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.5	UG/L	2.3	1.0
		Selenium, Total	4.0	UG/L	3.3	1.0
		Silicon, Total	21000	UG/L	6.4	1.0
		Strontium, Total	266	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	27.3	UG/L	0.80	1.0
		Zinc, Total	2.8	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-010	B103B6	Silver, Total	1.1	u UG/L	1.1	1.0
		Aluminum, Total	35.8	UG/L	22.7	1.0
		Arsenic, Total	4.4	UG/L	2.4	1.0
		Boron, Total	22.5	UG/L	2.7	1.0
		Barium, Total	74.3	UG/L	0.20	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Calcium, Total	57800	UG/L	19.2	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.90	u UG/L	0.90	1.0
		Chromium, Total	17.5	UG/L	0.60	1.0
		Copper, Total	1.7	UG/L	0.90	1.0
		Iron, Total	262	UG/L	21.8	1.0
		Potassium, Total	5460	UG/L	40.9	1.0
		Lithium, Total	5.6	UG/L	0.20	1.0
		Magnesium, Total	19300	UG/L	6.7	1.0
		Manganese, Total	2.7	UG/L	0.20	1.0
		Molybdenum, Total	6.5	UG/L	1.0	1.0
		Sodium, Total	19000	UG/L	4.1	1.0
		Nickel, Total	10.0	UG/L	0.90	1.0
		Phosphorus, Total	42.8	UG/L	20.0	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Antimony, Total	2.3	UG/L	2.3	1.0
		Selenium, Total	5.8	UG/L	3.3	1.0
		Silicon, Total	21100	UG/L	6.4	1.0
		Strontium, Total	267	UG/L	0.10	1.0
		Thallium, Total	4.0	u UG/L	4.0	1.0
		Vanadium, Total	27.7	UG/L	0.80	1.0
		Zinc, Total	2.1	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
=====	=====	=====	=====	=====	=====	=====
-011	B103B7 (F)	Silver, Total	1.1	UG/L	1.1	1.0
		Aluminum, Total	22.7	u UG/L	22.7	1.0
		Arsenic, Total	3.2	UG/L	2.4	1.0
		Boron, Total	20.6	UG/L	2.7	1.0
		Barium, Total	74.3	UG/L	0.20	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Calcium, Total	58200	UG/L	19.2	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.90	u UG/L	0.90	1.0
		Chromium, Total	4.9	UG/L	0.60	1.0
		Copper, Total	0.90	u UG/L	0.90	1.0
		Iron, Total	28.5	UG/L	21.8	1.0
		Potassium, Total	5540	UG/L	40.9	1.0
		Lithium, Total	5.6	UG/L	0.20	1.0
		Magnesium, Total	19500	UG/L	6.7	1.0
		Manganese, Total	0.99	UG/L	0.20	1.0
		Molybdenum, Total	6.6	UG/L	1.0	1.0
		Sodium, Total	19100	UG/L	4.1	1.0
		Nickel, Total	3.8	UG/L	0.90	1.0
		Phosphorus, Total	55.9	UG/L	20.0	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Antimony, Total	2.3	u UG/L	2.3	1.0
		Selenium, Total	5.5	UG/L	3.3	1.0
		Silicon, Total	21200	UG/L	6.4	1.0
		Strontium, Total	269	UG/L	0.10	1.0
		Thallium, Total	4.0	u UG/L	4.0	1.0
		Vanadium, Total	27.2	UG/L	0.80	1.0
		Zinc, Total	4.2	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-012	B103B8	Silver, Total	1.1	u UG/L	1.1	1.0
		Aluminum, Total	22.7	u UG/L	22.7	1.0
		Arsenic, Total	4.9	UG/L	2.4	1.0
		Boron, Total	22.9	UG/L	2.7	1.0
		Barium, Total	76.7	UG/L	0.20	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Calcium, Total	59700	UG/L	19.2	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.90	u UG/L	0.90	1.0
		Chromium, Total	33.6	UG/L	0.60	1.0
		Copper, Total	1.3	UG/L	0.90	1.0
		Iron, Total	205	UG/L	21.8	1.0
		Potassium, Total	5620	UG/L	40.9	1.0
		Lithium, Total	5.8	UG/L	0.20	1.0
		Magnesium, Total	20100	UG/L	6.7	1.0
		Manganese, Total	4.4	UG/L	0.20	1.0
		Molybdenum, Total	7.2	UG/L	1.0	1.0
		Sodium, Total	19400	UG/L	4.1	1.0
		Nickel, Total	17.7	UG/L	0.90	1.0
		Phosphorus, Total	53.4	UG/L	20.0	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Antimony, Total	3.2	UG/L	2.3	1.0
		Selenium, Total	6.1	UG/L	3.3	1.0
		Silicon, Total	21500	UG/L	6.4	1.0
		Strontium, Total	275	UG/L	0.10	1.0
		Thallium, Total	4.0	u UG/L	4.0	1.0
		Vanadium, Total	28.3	UG/L	0.80	1.0
		Zinc, Total	2.5	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	99L1739-MB1	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	22.7 u	UG/L	22.7	1.0
		Arsenic, Total	2.4	UG/L	2.4	1.0
		Boron, Total	2.7 u	UG/L	2.7	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	19.2 u	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	0.60 u	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	21.8 u	UG/L	21.8	1.0
		Potassium, Total	40.9 u	UG/L	40.9	1.0
		Lithium, Total	0.20 u	UG/L	0.20	1.0
		Magnesium, Total	6.7 u	UG/L	6.7	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Molybdenum, Total	1.0 u	UG/L	1.0	1.0
		Sodium, Total	4.1 u	UG/L	4.1	1.0
		Nickel, Total	0.90 u	UG/L	0.90	1.0
		Phosphorus, Total	20.0 u	UG/L	20.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Selenium, Total	3.3 u	UG/L	3.3	1.0
		Silicon, Total	6.4 u	UG/L	6.4	1.0
		Strontium, Total	0.10 u	UG/L	0.10	1.0
		Thallium, Total	4.0 u	UG/L	4.0	1.0
		Vanadium, Total	0.80 u	UG/L	0.80	1.0
		Zinc, Total	0.72	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-002	B10398	Silver, Total	50.6	1.1 u	50.0	101.2	1.0
		Aluminum, Total	2080	22.7 u	2000	104.0	1.0
		Arsenic, Total	2060	6.1	2000	102.7	1.0
		Boron, Total	1040	21.1	1000	101.6	1.0
		Barium, Total	2070	39.0	2000	101.4	1.0
		Beryllium, Total	52.1	0.10u	50.0	104.2	1.0
		Calcium, Total	69000	43600	25000	101.4	1.0
		Cadmium, Total	50.7	0.30u	50.0	101.4	1.0
		Cobalt, Total	510	0.90u	500	102.0	1.0
		Chromium, Total	220	15.1	200	102.7	1.0
		Copper, Total	252	0.90u	250	100.7	1.0
		Iron, Total	1110	79.6	1000	102.7	1.0
		Potassium, Total	31400	5390	25000	103.9	1.0
		Lithium, Total	1080	4.7	1000	107.1	1.0
		Magnesium, Total	38800	12900	25000	103.8	1.0
		Manganese, Total	534	3.5	500	106.1	1.0
		Molybdenum, Total	1010	7.8	1000	100.1	1.0
		Sodium, Total	43400	19200	25000	96.7	1.0
		Nickel, Total	506	5.4	500	100.0	1.0
		Phosphorus, Total	5160	59.0	5000	101.9	1.0
		Lead, Total	503	2.1 u	500	100.6	1.0
		Antimony, Total	518	3.2	500	103.0	1.0
		Selenium, Total	2060	3.3 u	2000	103.2	1.0
		Silicon, Total	20900	19500	1000	134.0*	1.0
		Strontium, Total	1190	189	1000	100.2	1.0
		Thallium, Total	2050	4.0 u	2000	102.7	1.0
		Vanadium, Total	550	27.4	500	104.5	1.0
		Zinc, Total	514	6.7	500	101.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L894

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		FACTOR (REP)
=====	=====	=====	=====	=====	=====	=====
-002REP	B10398	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	22.7 u	22.7 u	NC	1.0
		Arsenic, Total	6.1	4.3	34.6	1.0
		Boron, Total	21.1	18.4	13.7	1.0
		Barium, Total	39.0	37.7	3.4	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Calcium, Total	43600	42800	2.0	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.90u	0.90u	NC	1.0
		Chromium, Total	15.1	15.5	2.6	1.0
		Copper, Total	0.90u	0.90u	NC	1.0
		Iron, Total	79.6	87.0	8.9	1.0
		Potassium, Total	5390	5240	2.9	1.0
		Lithium, Total	4.7	4.6	2.2	1.0
		Magnesium, Total	12900	12600	2.4	1.0
		Manganese, Total	3.5	3.4	2.9	1.0
		Molybdenum, Total	7.8	7.3	6.6	1.0
		Sodium, Total	19200	18700	2.5	1.0
		Nickel, Total	5.4	4.7	13.9	1.0
		Phosphorus, Total	59.0	58.2	1.4	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Antimony, Total	3.2	2.3 u	NC 200	1.0
		Selenium, Total	3.3 u	3.3 u	NC	1.0
		Silicon, Total	19500	19100	2.2	1.0
		Strontium, Total	189	185	2.2	1.0
		Thallium, Total	4.0 u	4.0 u	NC	1.0
		Vanadium, Total	27.4	27.4	0.00	1.0
		Zinc, Total	6.7	3.8	55.2	1.0

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Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/06/00

CLIENT: TNUHANFORD C00-035 H1064

RECRA LOT #: 0010L894

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
=====	=====	=====	=====	=====	=====	=====
LCS1	99L1739-LC1	Silver, LCS	490	500	UG/L	97.9
		Aluminum, LCS	5000	5000	UG/L	100.1
		Arsenic, LCS	9590	10000	UG/L	95.9
		Boron, LCS	4940	5000	UG/L	98.8
		Barium, LCS	4860	5000	UG/L	97.1
		Beryllium, LCS	247	250	UG/L	98.8
		Calcium, LCS	24300	25000	UG/L	97.4
		Cadmium, LCS	244	250	UG/L	97.8
		Cobalt, LCS	2460	2500	UG/L	98.2
		Chromium, LCS	489	500	UG/L	97.7
		Copper, LCS	1210	1250	UG/L	96.9
		Iron, LCS	4920	5000	UG/L	98.4
		Potassium, LCS	24900	25000	UG/L	99.8
		Lithium, LCS	5010	5000	UG/L	100.2
		Magnesium, LCS	25300	25000	UG/L	101.4
		Manganese, LCS	759	750	UG/L	101.2
		Molybdenum, LCS	4900	5000	UG/L	98.0
		Sodium, LCS	24100	25000	UG/L	96.2
		Nickel, LCS	1950	2000	UG/L	97.3
		Phosphorus, LCS	4930	5000	UG/L	98.6
		Lead, LCS	2430	2500	UG/L	97.4
		Antimony, LCS	2970	3000	UG/L	99.0
		Selenium, LCS	9740	10000	UG/L	97.4
		Silicon, LCS	5210	5000	UG/L	104.2
		Strontium, LCS	4840	5000	UG/L	96.8
		Thallium, LCS	9770	10000	UG/L	97.7
		Vanadium, LCS	2500	2500	UG/L	99.9
		Zinc, LCS	983	1000	UG/L	98.3

0010L894

Custody Transfer Record/Lab Work Request Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client THU - Hanford COO-035

Est. Final Proj. Sampling Date _____

Project # 10985-001-001-9999-00

Project Contact/Phone # _____

RECRA Project Manager OWQC Spec Del Std TAT 30 dayDate Rec'd 10-6-00 Date Due 11-5-00

Account # _____

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 (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only												
		MS	MSD				0624H						RCAT333 RCAT333 ME1	IC0	IALKL	IN302	ITDS	ITOX	
001	B10397 (F)			W	9/29/00	0951													
002	98	✓	✓			↓	✓							✓	✓	✓	✓	✓	
003	99 (F)					0745								✓					
004	B0					↓	✓							✓	✓	✓	✓	✓	
005	B1 (F)					1031								✓					
006	B2					↓	✓							✓	✓	✓	✓	✓	
007	B3 (F)					0730								✓					
008	B4					↓	✓							✓	✓	✓	✓	✓	
009	B5 (F)					1122								✓					
010	B6					↓	✓							✓	✓	✓	✓	✓	

Special Instructions: Saf COO-035

DATE/REVISIONS:

1. IC ① 1. Cl, Br, F, I, NO2, NO3, SO4, PO42. Additional sample list - Al, Sb, Ba, B,3. Ca, Co, Cu, Fe, Li, Mg, Mn, Mo, Ni, P, K,4. Si, Sr, Ti, V, Zn (As Hg)5. Metals list changed

6. _____

ME1 = AG AL AS B- BA BE CA CD CO CR CU FE
K- LI MG MN MO NA NI P- PB
SB SE SI SR TL V- ZN

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered _____Airbill # See below2) Ambient or Chilled3) Received in Good
Condition ☒ or N4) Labels Indicate
Properly Preserved ☒ or N5) Received Within
Holding Times ☒ or N

COC Tape was:

1) Present on Outer
Package ☒ or N2) Unbroken on Outer
Package ☒ or N3) Present on Sample
☒ or N4) Unbroken on
Sample ☒ or NCOC Record Present
Upon Sample Rec't ☒ or NCooler
Temp. _____ °C

Relinquished by	Received by	Date	Time
<u>Frd Ex</u>	<u>TRoppel</u>	<u>10/6/00</u>	<u>0925</u>

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between
Samples Labels and
COC Record? Y or ☒ N

NOTES:

965 9505 055 -62 821489830191-5.89

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

[illegible]

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-1

Chem SDG H1064

Page 1 of 2

Collector **R.T SICKLE**Contact/Requester
JH KESSNERTelephone No. MSIN FAX
(509) 375-4688SAF No.
C00-035Sampling Origin
HANFORD SITE

Purchase Order/Charge Code

Project Title
ERDF GW MONITORING, SEPTEMBER 2000Logbook No.
WISAW5-H37Ice Chest No. Temp.
68 5.11.558Shipped To (Lab)
TMA/RECRAMethod of Shipment
GOVT VEHICLE

Bill of Lading/Air Bill No. 4235 7953 9470

Protocol
CERCLAData Turnaround
45 Days

Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B10397 (F)	✓	W	9/24/00	0951	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B10398	✓	W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B10398	✓	W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B10398	✓	W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B10398	✓	W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B10398	✓	W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B10398		W			1x20-mL P	Activity Scan	None
✓ B10398		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B10398		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B10398		W			1x1000-mL G/P	Carbon-14	None
✓ B10398		W			4x1000-mL G/P	Iodine-129	None
✓ B10398		W			2x1000-mL G/P	Radium-226	HNO3 to pH <2

Relinquished By **R.T SICKLE** Print Sign Date/Time 10-2-00 1400Received By **Fed Ex** Print Sign Date/Time 10-2-00 10:42Relinquished By **Fed Ex** Print Sign Date/Time 10-3-00 10:19Received By **AR Corso** Print Sign Date/Time 10-3-00 10:19Relinquished By **AR Corso** Print Sign Date/Time 10-5-00 13:12Received By **Fed Ex** Print Sign Date/Time 10-5-00 10:19Relinquished By **Fed Ex** Print Sign Date/Time 10-6-00 0925Received By **Thrapel** Print Sign Date/Time 10-6-00 0925

Matrix *

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

FINAL SAMPLE
DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-2

Page 1 of 2

Collector **R.T SICKLE**Contact/Requester
JH KESSNER

Telephone No.

MSIN

FAX

SAF No.
C00-035Sampling Origin
HANFORD SITE

Purchase Order/Charge Code

Project Title
ERDE GW MONITORING, SEPTEMBER 2000

Logbook No.

Ice Chest No. **51ML 548** Temp.Shipped To (Lab)
TMA/RECRAMethod of Shipment
GOVT. VEHICLEBill of Lading/Air Bill No. **42357953 9460**Protocol
CERCLAData Turnaround
45 Days

Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
.. ..

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10399 (F) ✓	✓	W	4/29/00	0745	1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
B103B0 ✓	✓	W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B103B0 ✓	✓	W			1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
B103B0 ✓	✓	W			1x500-mL P	IC Anions - 300.0	Cool 4C
B103B0 ✓	✓	W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B103B0 ✓	✓	W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B0 ✓	✓	W			1x20-mL P	Activity Scan ✓	None
B103B0 ✓	✓	W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B103B0 ✓	✓	W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B103B0 ✓	✓	W			1x1000-mL G/P	Carbon-14 ✓	None
B103B0 ✓	✓	W			4x1000-mL G/P	Iodine-129	None
B103B0 ✓	✓	W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By R.T SICKLE	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00 1400	Received By Fred Ex	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00	Matrix * S - Soil DS - Drum Solid SE - Sediment DL - Drum Liquid SO - Solid T - Tissue SL - Sludge WI - Wipe W - Water L - Liquid O - Oil V - Vegetation A - Air X - Other
Relinquished By Fred Ex			Date/Time 10-3-00 10:10	Received By JR Core			Date/Time 10-3-00 10:10	
Relinquished By JR Core			Date/Time 10-5-00 13:42	Received By Fred Ex			Date/Time 10-5-00	
Relinquished By Fred Ex			Date/Time 10-6-00 0925	Received By Thoppal			Date/Time 10-6-00 0925	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time	

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
Chem SDG H1064

C.O.C. # C00-035-2

Page 2 of 2

FAX

FAX[illegible]

Relinquished By **R.T SICKLE** Print *[Signature]* Sign *[Signature]* Date/Time **10-2-00** 1400

Received By	Print	Sign	Date/Time
	Fed Ex		10-2-00

Matrix *

Relinquished By	<i>[Signature]</i>	Date/Time	
<i>Fel Ex</i>	<i>12:00 3-10-83</i>	<i>12:00</i>	

Received By J.R. Pons BLA Date/Time 10-3-10 10:20

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

Relinquished By DR. PERLA P. P. P. P. Date/Time 10-5-00 13:40

Received By Fed Ex. Date/Time 10-5-01

Relinquished By FRDEX Date/Time 10.6.00 0925

Received By	Date/Time
<i>Therrell</i>	10-6-00 0925

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-3

Chem. SDC H1064

Page 1 of 2

Collector KB HULSE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN FAX
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code	
Project Title ERDF GW MONITORING, SEPTEMBER 2000	Logbook No. WM-SAWS-H35	Ice Chest No. 62 SINK 549	Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 79539507	
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

.. ..

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B1 (F)		W	9-29-00	1031	1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B2		W			3x40-iriL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B2		W			1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B2		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B2		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B2		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B2		W			1x20-mL P	Activity Scan	None
✓ B103B2		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B2		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B2		W			1x1000-mL G/P	Carbon-14	None
✓ B103B2		W			4x1000-mL G/P	Iodine-129	None
✓ B103B2		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By KB HULSE	Print <i>KB Hulse</i>	Sign <i>KB Hulse</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-2-00	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fed Ex			Date/Time 10-3-00 10:4	Received By JA CORNO			Date/Time 10-3-00 10:40	
Relinquished By JR CORNO			Date/Time 10-5-00 13:4	Received By Fed Ex			Date/Time 10-5-00	
Relinquished By Fed Ex			Date/Time 10-6-00 0925	Received By Thompson			Date/Time 10-6-00 0925	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)						Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C00-035-3

Page 2 of 2

SAF No.
C00-035

Contact/Requestor
JH KESSNER

Telephone No.	MSIN
(509) 375-4688	

	Preservative
--	---------------------

[illegible]

Relinquished By **KB HULSE** Print *KB Hulse* Sign *KB Hulse* Date/Time *10-2-00* *1600*

Received By	Print	Sign	Date/Time
	Fed	Ex	10-2-00

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

Retinquished By	Date/Time
Fed Ex	10-2-00 10:00

Received By JA Corso Date/Time 10-3-00 10:00

Relinquished By DR Coker HPRemo Date/Time 10-5-00 18:42

Received By Fed Ex Date/Time 10-5-00

Relinquished By FDEx Date/Time 10:00:00 0925

Received By Thressel Date/Time 10:00 0925

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-4

CHEM SDG H1064

Page 1 of 2

Collector KB HULSE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN 	FAX
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code 		
Project Title ERDE GW MONITORING, SEPTEMBER 2000	Logbook No. WM-SAWS-H35	Ice Chest No. 20	Temp. 51.2 46.2	
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9518		
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. 		

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption:

Yes ☒No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B3 (F) ✓		W	9-29-00	0730	1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B4 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B4 ✓		W			1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B4 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B4 ✓		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B4 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B4 ✓		W			1x20-mL P	Activity Scan ✓ <i>Stays here</i>	None
✓ B103B4 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
✓ B103B4 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
✓ B103B4 ✓		W			1x1000-mL G/P	Carbon-14	None
✓ B103B4 ✓		W			4x1000-mL G/P	Iodine-129	None
✓ B103B4 ✓		W			2x1000-mL G/P	Radium-226	HNO3 to pH <2

Relinquished By KB HULSE	Print <i>KB Hulse</i>	Sign <i>KB Hulse</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-02-00	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solid DL = Drum Liquid T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other		
Relinquished By Fed. EXPRESS			Date/Time 10-03-00 10:44	Received By E. J. J. J.			Date/Time 10-03-00			
Relinquished By JACOREO JACOREO			Date/Time 10-5-00 13:42	Received By Fed Ex			Date/Time 10-5-00			
Relinquished By FedEx			Date/Time 10-6-00 0925	Received By Thompson			Date/Time 10-6-00 0925			
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Disposed By	Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C00-035-4

Chem SDC H1064

Page 2 of 2

SAF No. C00-035		Contact/Requestor JH KESSNER			Telephone No. (509) 375-4688		MSIN		FAX	
Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis		Preservative		
B103B4 ✓		W	9-29-00	0730	1x1000-mL G/P	Technetium-99 (Status Heat)		HCl to pH <2		
B103B4 ✓		W			1x100-mL G/P	Total Uranium		HNO3 to pH <2		
✓ B103B4 ✓		W			1x500-mL G/P	TDS - 180.1		Cool 4C		
✓ B103B4 ✓		W			1x500-mL aGs*	TOX - 9020		H2SO4 to pH <2 Cool 4C		
/										
Relinquished By KB HULSE Print Sign Date/Time 10-2-00 1400 Received By Fed Ex Print Sign Date/Time 10-02-00										
Relinquished By Fed Ex Print Sign Date/Time 10-03-00 Received By E. J. J. Print Sign Date/Time 10-03-00										
Relinquished By JR C. Print Sign Date/Time 10-5-00 13:00 Received By Fed Ex Print Sign Date/Time 10-5-00										
Relinquished By Fed Ex Print Sign Date/Time 10-6-00 0925 Received By Theppel Print Sign Date/Time 10-6-00 0925										
FINAL SAMPLE DISPOSITION		Disposal Method (a.g., Return to customer, per lab procedure, used in process)					Disposed By		Date/Time	

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-5

CHEM SDG H1064

Page 1 of 2

Collector RT SICKLE C00-035	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN FAX
Project Title ERDE GW MONITORING, SEPTEMBER 2000	Sampling Origin HANFORD SITE	Purchase Order/Charge Code	
Shipped To (Lab) TMA/RECRA	Logbook No. 1111-5AUS-H37	Ice Chest No. 67 SML1/GWS107	Temp. 4235 7953 9492
Protocol CERCLA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No.	Offsite Property No.
Data Turnaround 45 Days			

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption:

Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B5 (F)		W	9/21/00	1122	1x500-mL G/P	ICP Metals - 8010A (SW-846) ✓	HNO3 to pH <2
✓ B103B6		W			3x40-mL sGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B6		W			1x500-mL G/P	ICP Metals - 8010A (SW-846) ✓	HNO3 to pH <2
✓ B103B6		W			1x500-mL P	IC Anions - 300.0 ✓	Cool 4C
✓ B103B6		W			1x250-mL G/P	Alkalinity - 310.1 ✓	Cool 4C
✓ B103B6		W			1x500-mL G/P	NO2/NO3 - 353.1 ✓	H2SO4 to pH <2 Cool 4C
✓ B103B6		W			1x20-mL P	Activity Scan	None
✓ B103B6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B6		W			1x1000-mL G/P	Carbon-14	None
✓ B103B6		W			4x1000-mL G/P	Iodine-129	None
✓ B103B6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By RT SICKLE	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00 1400	Received By FED EX	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00 1010	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solid DL = Drum Liquid T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By Fed Ex			Date/Time 10-3-00 10:42	Received By JR EDELL			Date/Time 10-3-00	
Relinquished By E. Seguro			Date/Time 10-05-00 13:00	Received By FED EXPRESS			Date/Time 10-05-00	
Relinquished By Fed Ex			Date/Time 10-06-00 0925	Received By Thippel			Date/Time 10-06-00 0925	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-6

CHEM SDG H1064

Page 1 of 2

Collector R.T. SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN 	FAX
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code 		
Project Title ERDE GW MONITORING, SEPTEMBER 2000	Logbook No. W11 SAWS-H37	Ice Chest No. 69 GWS107	Temp. 	
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9481		
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. 		

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption:

Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B103B7 (F) ✓		W	9/29/00	11:25	1x500-mL G/P	ICP Metals - 6010A (SW-846) ✓	HNO3 to pH <2
B103B8 ✓		W			1x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B103B8 ✓		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) ✓	HNO3 to pH <2
B103B8 ✓		W			1x500-mL P	IC Anions - 300.0 ✓	Cool 4C
B103B8 ✓		W			1x250-mL G/P	Alkalinity - 310.1 ✓	Cool 4C
B103B8 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1 ✓	H2SO4 to pH <2 Cool 4C
B103B8 ✓		W			1x20-mL P	Activity Scan	None
B103B8 ✓		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B103B8 ✓		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B103B8 ✓		W			1x1000-mL G/P	Carbon-14	None
B103B8 ✓		W			4x1000-mL G/P	Iodine-129	None
B103B8 ✓		W			2x1000-mL G/P	Radium-226	HNO3 to pH <2

Relinquished By R.T. SICKLE	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00/1400	Received By Fed Ex	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00	Matrix * S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solid DL - Drum Liquid T - Tissue W1 - Wipe L - Liquid V - Vegetation X - Other
Relinquished By Fed Ex			Date/Time 10-3-00 10:00	Received By JR Kovso			Date/Time 10-3-00 10:00	
Relinquished By E			Date/Time 10-05-13:00	Received By FED EXPRESS			Date/Time 10-05/00	
Relinquished By Fed Ex			Date/Time 10-06-00 0925	Received By Thompson			Date/Time 10-06-00 0925	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time	

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-6

CHEM SDC H1064

Page 2 of 2

SAF No.
C00-035

Contact/Requestor
JH KESSNER

Telephone No.
(509) 375-4688

MSIN

FAX[illegible]

Relinquished By
R.T SICKLE

Print

STED

Date/Time

Received By

Print

Sigra

Date/Time

Matrix *

Relinquished By

Date/Time

Received By _____

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

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

**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD C00-035
RFW #: 0010L894
SDG/SAF #: H1064/B01-019

W.O. #: 10985-001-001-9999-00
Date Received: 10-06-00

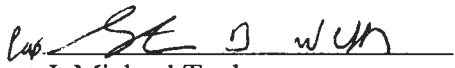
GC/MS VOLATILE

The set of samples consisted of six (6) water samples collected on 09-29-00.

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 10-11,12,13-00.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were analyzed within required holding time.
3. Non-target compounds were not detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
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 the CRQL.
8. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-08-00
Date

pef\group\data\voa\tnu-hanford-10-894975.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 44 pages.

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.



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.



Volatiles by GC/MS, HSL List

RFW Batch Number: 0010L894

Client: **TNUHANFORD C00-035 H1064** Work Order: 10985001001 Page: 1a

*= Outside of EPA CLP QC limits.

Cust ID: B10398 B10398 B10398 B103B0 B103B2 B103B4

RFW#: 002 002 MS 002 MSD 004 006 008 00

Chlorobenzene	5 U	99 %	108 %	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/29/00 11:14

RFW Batch Number: 0010L894

Client: TNUHANFORD C00-035 H1064 Work Order: 10985001001 Page: 2a

20

Cust ID:		B103B6		B103B8		VBLKYY		VBLKYY BS		VBLKVK		VBLKVK BS	
Sample Information	RFW#:	010		012		00LVK440-MB1		00LVK440-MB1		00LVK441-MB1		00LVK441-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Toluene-d8		104	%	100	%	104	%	104	%	100	%	107	%
Surrogate	Bromofluorobenzene	103	%	99	%	105	%	103	%	105	%	101	%
Recovery	1,2-Dichloroethane-d4	95	%	92	%	94	%	93	%	94	%	95	%
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====													
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		5	U	5	U	2	J	2	BJ	4	J	4	BJ
Acetone		10	U	10	U	10	U	10	U	4	J	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	80	%	5	U	92	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		1	J	1	J	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		9		9		5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U	100	%	5	U	97	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	102	%	5	U	100	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	5	U	109	%	5	U	104	%

*= Outside of EPA CLP QC limits.

Cust ID: B103B6 B103B8 VBLKYY VBLKYY BS VBLKVK VBLKVK BS

RFW#: 010 012 00LVK440-MB1 00LVK440-MB1 00LVK441-MB1 00LVK441-MB1

Chlorobenzene	5 U	5 U	5 U	113 %	5 U	107 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only

0010L894

Custody Transfer Record/Lab Work Request Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client <u>THU - Hanford C00-035</u>	Refrigerator # <u>1</u>	A-C	D	E	F	G	H	I	J
Est. Final Proj. Sampling Date	#/Type Container	Liquid <u>3v</u>	IP	IP	IP	IP	IP	IP	IP
Project # <u>10985-001-001-9999-00</u>	Solid								
Project Contact/Phone #	Volume	Liquid <u>40</u>	500	500	250	500	500	500	500
RECRA Project Manager <u>AS</u>	Solid								
QC <u>Spec</u> Del <u>Std</u> TAT <u>30 day</u>	Preservatives	HCl	HNO3	-	-	H2SO4	-	H2SO4	
Date Rec'd <u>10-6-00</u> Date Due <u>11-5-00</u>	ANALYSES REQUESTED	ORGANIC			INORG				
Account #	VOA	BNA	Pest/PCB	Herb	Metal	CN			

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Special Instructions: Saf C00-035

DATE/REVISIONS:

IC ① 1. Cl, Br, Fl, No2, No3, So4, PO4

10-10-00 2. Addition to metals list - Al, Sb, Ba, B,

10-10-00 3. ~~Ca, Fe, Cu, Ti, Mg, Mn, Ni, Pb, Zn~~10-10-00 4. ~~Si, Mo, Sr, V, Zn (No Hg)~~

10-10-00 5. Metals list changed

6.

ME1 = AG AL AS B- BA BE CA CD CO CR CU FE
K- LI MG MN MO NA NI P- PB
SB SE SI SR TL V- ZN

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or Hand Delivered ☐Airbill # See below2) Ambient or Chilled3) Received in Good Condition ☒ or N4) Labels Indicate Properly Preserved ☒ or N5) Received Within Holding Times ☒ or N

COC Tape was:

1) Present on Outer Package ☒ or N2) Unbroken on Outer Package ☒ or N3) Present on Sample ☒ or N4) Unbroken on Sample ☒ or NCOC Record Present Upon Sample Rec'l ☒ or NCooler Temp. 82.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Frn Ex	TKeppe	10/6/00	0925	COMPOSITE WASTE	ORIGINAL		

DEWITT

965 9505 055 10-28 821489830191-5.89

00106894

**RECRA
LabNet**

[illegible]

PAGE 1 Thermo NUTech
CONTRACT: Blanket Order #N501118

PURCHASE ORDER # R0-10-017-SU-WT
10/04/00 12:50:31

SDG H1064
ORDER Thermo NUTech (TMA/Richmond)
FROM (Thermo Analytical)
2030 Wright Avenue
Richmond, CA 94804-0040
ATTEN Purchasing
PHONE 510-235-2633

INVOICE Thermo NUTech (TMA/Richmond)
TO (Thermo Analytical)
2030 Wright Avenue
Richmond, CA 94804-0040
ATTEN Purchasing
PHONE 510-235-2633

Xen C
AUTHORIZED BY

ORDER RECRA (Weston)
TO 208 Welsh Pool Road
Lionville, PA 19353

Please telephone our Sample Control Department immediately if
any problems are encountered in the receipt or the analysis of
the samples listed below.

ATTEN Kyle Clay

This Purchase Order authorizes RECRA to perform all work
listed on the enclosed COC. Alterations to work requested can
only be made by Thermo Retech or the appropriate Hanford
client. Prices to be in accordance with Price list of 8/23/99.

PRICE CODE 7N

FRACTION	TEST	DESCRIPTION	UNITS	DUE DATE	COST
01A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
02A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
02B	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
02C	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
03A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
04A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
05A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00

SDC H1064

<u>FRACTION</u>	<u>TEST</u>	<u>DESCRIPTION</u>	<u>UNITS</u>	<u>DUE DATE</u>	<u>COST</u>
06A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
07A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
08A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
09A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
10A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
11A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
12A	E012	ICP Metals (Client List)	Please Advise	11/17/00	0.00
	E122	Vol Organics-8260(TCL)	Please Advise	11/17/00	0.00
	E153	TOX-9020	Please Advise	11/17/00	0.00
	E211	TDS-160.1	Please Advise	11/17/00	0.00
	E260	Anions by IC-300.0(Client)	Please Advise	11/17/00	0.00
	E265	Alkalinity-310.1	Please Advise	11/17/00	0.00
	E285	N:Nitrite-353.2	Please Advise	11/17/00	0.00
TOTAL CHARGE NOT TO EXCEED					\$0.00

SDG H1064
10/04/00 12:50:36

DASH	SAMPLE IDENTIFICATION	STORED	DEPT	START	DUE BY	TESTS, FRACTIONS /
01A	B10398(F)	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012
02A	B10398	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
02B	B10398 MS	RECRA	SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
02C	B10398 DUP	RECRA	SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
03A	B103B1	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012
04A	B103B2	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
05A	B103B5(F)	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012
06A	B103B6	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
07A	B103B7(F)	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012
08A	B103B8	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
09A	B10399(F)	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012
10A	B103B0	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285
11A	B103B3(F)	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012
12A	B103B4	RECRA	EN	10/03	10/03	DISPOS
			SU WT	10/08	11/17	E012 E122 E153 E211 E260
						E265 E285

10/04/00 12:50:43

WORK ID: SAF C00-035 SDG H1064

RCVD: 10/03/00 DUE: 11/17/00

KEEP: 11/17/01 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	B10398 (F)	RECRA	DISPOS E012
02A	B10398	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
02B	B10398 MS	RECRA	E012 E122 E153 E211 E260 E265 E285
02C	B10398 DUP	RECRA	E012 E122 E153 E211 E260 E265 E285
03A	B103B1	RECRA	DISPOS E012
04A	B103B2	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
05A	B103B5 (F)	RECRA	DISPOS E012
06A	B103B6	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
07A	B103B7 (F)	RECRA	DISPOS E012
08A	B103B8	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
09A	B10399 (F)	RECRA	DISPOS E012
10A	B103B0	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285
11A	B103B3 (F)	RECRA	DISPOS E012
12A	B103B4	RECRA	DISPOS E012 E122 E153 E211 E260 E265 E285

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
<i>PCorep</i>	<i>10-5-00</i>	<i>RECRA</i>	<i>10-5-00</i>	<i>TRappe</i>	<i>10-6-00</i>
<i>FrdEx</i>	<i>10-6-00</i>	<i>RECRA</i>	<i>10-6-00</i>		

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C00-035-1

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Chem SDG H1064

Collector R.T SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code		
Project Title ERDE GW MONITORING, SEPTEMBER 2000	Logbook No. W115AWS-1137	Ice Chest No. 5111558	Temp.	
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9470		
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

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SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10397 (F)	✓	W	10/24/00	0951	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B10398	✓	W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B10398	✓	W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B10398	✓	W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10398	✓	W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B10398	✓	W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B10398		W			1x20-mL P	Activity Scan	None
B10398		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10398		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10398		W			1x1000-mL G/P	Carbon-14	None
B10398		W			4x1000-mL G/P	Iodine-129	None
B10398		W			2x1000-mL G/P	Radium-226	HNO3 to pH <2

Relinquished By R.T SICKLE	Print	Sign	Date/Time 10-2-00 1400	Received By Fed Ex	Print	Sign	Date/Time 10-2-00	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fed Ex			Date/Time 10-3-00 10:00	Received By DR Corso			Date/Time 10-3-00	
Relinquished By DR Corso			Date/Time 10-5-00 13:00	Received By Fed Ex			Date/Time 10-5-00	
Relinquished By Fed Ex			Date/Time 10-6-00 0925	Received By Thompson			Date/Time 10-6-00 0925	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time	

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-2	
		Chem SDG H1064				Page 1 of 2	
Collector R.T SICKLE		Contact/Requester JH KESSNER		Telephone No. MSIN (509) 375-4688		FAX	
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code			
Project Title ERDE GW MONITORING, SEPTEMBER 2000		Logbook No. WILSAWS H37		Ice Chest No. 51ML 548 Temp.			
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No. 42357953 9460			
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10399 (F) ✓		W	4/24/00	0745	1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
B103B0 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B103B0 ✓		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
B103B0 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B103B0 ✓		W			1x250-mL G/P	Alkalinity - 340:1	Cool 4C
B103B0 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B0 ✓		W			1x20-mL P	Activity Scan ✓	None
B103B0 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B103B0 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B103B0 ✓		W			1x1000-mL G/P	Carbon-14 ✓	None
B103B0 ✓		W			1x1000-mL G/P	Iodine-129	None
B103B0 ✓		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By R.T SICKLE Print Sign Date/Time 10-2-00 1400		Received By Fred Ex Print Sign Date/Time 10-2-00		Matrix * S - Soil DS - Drum Solid SE - Sediment DL - Drum Liquid SO - Solid T - Tissue SL - Sludge WI - Wipe W - Water L - Liquid O - Oil V - Vegetation A - Air X - Other
Relinquished By Fred Ex Date/Time 10-3-00 10:10		Received By JR Coree Date/Time 10-3-00 10:10		
Relinquished By JR Coree Date/Time 10-5-00 13:00		Received By Fred Ex Date/Time 10-5-00		
Relinquished By Fred Ex Date/Time 10-6-00 0925		Received By Therrell Date/Time 10-6-00 0925		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C00-035-3

CHEM SDC H1064

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Collector KB HULSE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN 51	FAX 51
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code		
Project Title ERDF GW MONITORING, SEPTEMBER 2000	Logbook No. WM-SAWS-H35	Ice Chest No. 62 SML 549	Temp.	
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9507		
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B1 (F)		W	9-29-00	1031	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B2		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B2		W			1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B2		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B2		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B2		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
✓ B103B2		W			*x20-mL P	Activity Scan	None
✓ B103B2		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B103B2		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B103B2		W			1x1000-mL G/P	Carbon-14	None
✓ B103B2		W			4x1000-mL G/P	Iodine-129	None
✓ B103B2		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By KB HULSE	Print <i>KB Hulse</i>	Sign <i>KB Hulse</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-2-00	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge W1 = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By Fed Ex			Date/Time 10-3-00 10:14	Received By JA Corso			Date/Time 10-3-00 10:14		
Relinquished By JR Corso			Date/Time 10-5-00 13:4	Received By Fed Ex			Date/Time 10-5-00		
Relinquished By Fed Ex			Date/Time 10-6-00 0925	Received By Therrell			Date/Time 10-6-00 0925		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Disposed By Therrell	
							Date/Time		

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						C.O.C. # C00-035-4	
								Page 1 of 2	
Collector KB HULSE		Contact/Requester JH KESSNER				Telephone No. MSIN (509) 375-4688			
SAF No. C00-035		Sampling Origin HANFORD SITE				Purchase Order/Charge Code			
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. WM-SAWS-H35				Ice Chest No. 20 Temp. 51.2 46.2			
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE				Bill of Lading/Air Bill No. 4235 7953 9518			
Protocol CERCLA		Data Turnaround 45 Days				Offsite Property No.			
POSSIBLE SAMPLE HAZARDS/REMARKS ...						SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐ FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)			

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B103B3 (F) ✓		W	9-29-00	0730	1x500-mL G/P	ICP Metals - 6010A (SW-846)	HNO3 to pH <2
✓ B103B4 ✓		W	↓	↓	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
✓ B103B4 ✓		W			1x500-mL G/P	ICP Metals - 8010A (SW-846)	HNO3 to pH <2
✓ B103B4 ✓		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B103B4 ✓		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
✓ B103B4 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B103B4 ✓		W			1x20-mL P	Activity Scan ✓	None
B103B4 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B103B4 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B103B4 ✓		W			1x1000-mL G/P	Carbon-14	None
B103B4 ✓		W			4x1000-mL G/P	Iodine-129	None
B103B4		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By KB HULSE Print Sign <i>[Signature]</i> Date/Time 10-2-00 1400			Received By Fed Ex Print Sign <i>[Signature]</i> Date/Time 10-02-00			Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fed. Express Date/Time 10-03-00 10:45			Received By E. Legro Date/Time 10-03-00			
Relinquished By JR Corbett Date/Time 10-5-00 13:42			Received By Fed Ex Date/Time 10-5-00			
Relinquished By FedEx Date/Time 10-6-00 0925			Received By Therrell Date/Time 10-6-00 0925			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By Date/Time
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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C00-035-4

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SAF No.
C00-035Contact/Requestor
JH KESSNERTelephone No.
(509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B103B4 ✓		W	9-29-00	0730	1x1000-mL G/P	Technetium-99 (Status VERT)	HCl to pH <2
B103B4 ✓		W			1x100-mL G/P	Total Uranium	HNO3 to pH <2
B103B4 ✓		W			1x500-mL G/P	TDS - 180.1	Cool 4C
B103B4 ✓		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By KB HULSE	Print <i>KB Hulse</i>	Sign <i>KB Hulse</i>	Date/Time 10-2-00 1400	Received By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-02-00	Matrix * S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solid DL - Drwn Liqui T - Tissue WI - Wipe L - Liquid V - Vegetation X - Other
Relinquished By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-03-00	Received By E. J. J. J.	Print <i>E. J. J. J.</i>	Sign <i>E. J. J. J.</i>	Date/Time 10-03-00	
Relinquished By JR Cervera	Print <i>JR Cervera</i>	Sign <i>JR Cervera</i>	Date/Time 10-5-00 13:40	Received By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-5-00	
Relinquished By Fed Ex	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time 10-6-00 0925	Received By Thompson	Print <i>Thompson</i>	Sign <i>Thompson</i>	Date/Time 10-6-00 0925	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)						Disposed By	Date/Time

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # C00-035-5									
		CHEM SDG H1064				Page 1 of 2									
Collector R.T. SICKLE		Contact/Requester JH KESSNER		Telephone No. (509) 375-4688		MSIN FAX									
SAF No. C00-035		Sampling Origin HANFORD SITE		Purchase Order/Charge Code											
Project Title ERDF GW MONITORING, SEPTEMBER 2000		Logbook No. W11-SAW5-H37		Ice Chest No. 67 SML1/GWS-10-7		Temp. 4235 7953 9492									
Shipped To (Lab) TMA/RECRA		Method of Shipment GOVT. VEHICLE		Bill of Lading/Air Bill No.											
Protocol CERCLA		Data Turnaround 45 Days		Offsite Property No.											
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS Hold Time FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)											
Sample No.		Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative							
✓ B103B5 (F)		W	9/21/00	1122	1x500-mL G/P	ICP Metals - 8010A (SW-846) ✓		HNO3 to pH <2							
✓ B103B6		W			3x40-mL aGs*	VOA - 8240A (TCL) ✓		HCl or H2SO4 to pH <2 Cool 4C							
✓ B103B6		W			1x500-mL G/P	ICP Metals - 8010A (SW-846) ✓		HNO3 to pH <2							
✓ B103B6		W			1x500-mL P	IC Anions - 300.0 ✓		Cool 4C							
✓ B103B6		W			1x250-mL G/P	Alkalinity - 310.1 ✓		Cool 4C							
✓ B103B6		W			1x500-mL G/P	NO2/NO3 - 353.1 ✓		H2SO4 to pH <2 Cool 4C							
✓ B103B6		W			1x20-mL P	Activity Scan		None							
✓ B103B6		W			2x1000-mL G/P	Gross Alpha		HNO3 to pH <2							
✓ B103B6		W			2x1000-mL G/P	Gross Beta		HNO3 to pH <2							
✓ B103B6		W			1x1000-mL G/P	Carbon-14		None							
✓ B103B6		W			4x1000-mL G/P	Iodine-129		None							
✓ B103B6		W			2x1000-mL G/P	Radium -226		HNO3 to pH <2							
Relinquished By		Print	Sign	Date/Time		Received By		Print	Sign	Date/Time	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other				
R.T. SICKLE				10-2-00 1400		Fed Ex				10-2-00					
Fed Ex				10-3-00 10:00		J.R. Edwards				10-3-00 7010					
E. Segura				10-05-00 13:00		FED EXPRESS				10-05-00					
Relinquished By		Print	Sign	Date/Time		Received By		Print	Sign	Date/Time					
Fed Ex				10-06-00 0925		Therrell				10-06-00 0925					
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)										Disposed By		Date/Time	

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 2 of 2
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PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 2 of 2
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PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 2 of 2
		Chem SDG H1064

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 2 of 2
		Chem SDG H1064

SAF No. C00-035	Contact/Requestor JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX	44
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SAF No. C00-035	Contact/Requestor JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX	44
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SAF No. C00-035	Contact/Requestor JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX	44
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SAF No. C00-035	Contact/Requestor JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX	44
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SAF No. C00-035	Contact/Requestor JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX	44
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SAF No. C00-035	Contact/Requestor JH KESSNER	Telephone No. (509) 375-4688	MSIN	FAX	44
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Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
R.T. SICKLE	<i>R.T. Sickle</i>	<i>[Signature]</i>	10-2-00/1400	Fred	Ex	<i>[Signature]</i>	10-2-00	S = Soil DS = Drum Solid or = Soil DS = Drum Solid

Relinquished By	Date/Time	Received By	Date/Time
Feal Ex	10-3-00 10:12	DR L-11-SD MC	10-3-00 10:12

Relinquished By F - Lequero	Date/Time 10-05-02	Received By FEL EXPRESS	Date/Time 10-05/04	☒ Oil ☐ Air	☒ Vegetation ☐ Other
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Relinquished By	Date/Time	Received By	Date/Time
Frd Ex	10:6:06 0925	Therrell	10:6:00 0925

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
R.T. SICKLE	<i>R.T. Sickle</i>	<i>[Signature]</i>	10-2-00/1400	Fred	Ex	<i>[Signature]</i>	10-2-00	S = Soil DS = Drum Solid or = Soil DS = Drum Solid

Relinquished By	Date/Time	Received By	Date/Time
Feal Ex	10-3-00 10:12	DR L-11-SD MC	10-3-00 10:12

Relinquished By F - Lequero	Date/Time 10-05-02	Received By FEL EXPRESS	Date/Time 10-05/04	☒ Oil ☐ Air	☒ Vegetation ☐ Other
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Relinquished By	Date/Time	Received By	Date/Time
Frd Ex	10:6:06 0925	Therul	10:6:00 0925

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
R.T. SICKLE	<i>R.T. Sickle</i>	<i>[Signature]</i>	10-2-00/1400	Fred	Ex	<i>[Signature]</i>	10-2-00	S = Soil DS = Drum Solid or = Soil DS = Drum Solid

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *			
R.T. SICKLE	R.T. Sickle	[Signature]	10-2-00/1400	Fred	EX	[Signature]	10-2-00	S	= Soil	DS	= Drum Solid
Relinquished By			Date/Time	Received By			Date/Time	SE	= Sediment	DL	= Drum Liquid
Fred Ex			10-3-00 10:10	DR LINDSEY	DR LINDSEY	[Signature]	10-3-00 10:10	SO	= Solid	T	= Tissue
Relinquished By			Date/Time	Received By			Date/Time	SL	= Sludge	WI	= Wipe
E. Leguano			10-05-00	Fred	EXPRESS	[Signature]	10-05-00	W	= Water	L	= Liquid
								O	= Oil	V	= Vegetation
								A	= Air	X	= Other

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *			
R.T. SICKLE	R.T. Sickle	[Signature]	10-2-00/1400	Fred	EX	[Signature]	10-2-00	S	= Soil	DS	= Drum Solid
Relinquished By			Date/Time	Received By			Date/Time	SE	= Sediment	DL	= Drum Liquid
Fred Ex			10-3-00 10:10	DR LINDSEY	DR LINDSEY	[Signature]	10-3-00 10:10	SO	= Solid	T	= Tissue
Relinquished By			Date/Time	Received By			Date/Time	SL	= Sludge	WI	= Wipe
E. Leguano			10-05-00	Fred	EXPRESS	[Signature]	10-05-00	W	= Water	L	= Liquid
								O	= Oil	V	= Vegetation
								A	= Air	X	= Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-035-6

CHEM SDG H1064

Page 1 of 2

Collector R.T. SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688	MSIN MSIN	FAX FAX
SAF No. C00-035	Sampling Origin HANFORD SITE	Purchase Order/Charge Code		
Project Title ERDF GW MONITORING, SEPTEMBER 2000	Logbook No. WHS-437	Ice Chest No. 69 GWS107 Temp.		
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9481		
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

.. ..

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

FAX COPIES OF TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B103B7 (F) ✓		W	9/29/00	11:20	1x500-mL G/P	ICP Metals - 6010A (SW-846) ✓	HNO3 to pH <2
B103B8 ✓		W			3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B103B8 ✓		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) ✓	HNO3 to pH <2
B103B8 ✓		W			1x500-mL P	IC Anions - 300.0 ✓	Cool 4C
B103B8 ✓		W			1x250-mL G/P	Alkalinity - 310.1 ✓	Cool 4C
B103B8 ✓		W			1x500-mL G/P	NO2/NO3 - 353.1 ✓	H2SO4 to pH <2 Cool 4C
B103B8 ✓		W			1x20-mL P	Activity Scan	None
B103B8 ✓		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B103B8 ✓		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B103B8 ✓		W			1x1000-mL G/P	Carbon-14	None
B103B8 ✓		W			4x1000-mL G/P	Iodine-129	None
B103B8 ✓		W			2x1000-mL G/P	Radium-226	HNO3 to pH <2

Relinquished By R.T. SICKLE	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00/1400	Received By Fed Ex	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 10-2-00	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liqui SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Fed Ex			Date/Time 10-3-00 10:00	Received By JR KESSNER			Date/Time 10-3-00 10:00	
Relinquished By E. Aguirre			Date/Time 10-05-13:00	Received By FED EXPRESS			Date/Time 10-05/00	
Relinquished By Fed Ex			Date/Time 10-06-00 0925	Received By Thompson			Date/Time 10-06-00 0925	
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Date/Time

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Bechtel Hanford (PNNL)</u>	Date/Time received <u>10-3-00 10:00</u>		
CoC No. <u>LOD-035-1</u>			
Container I.D. No. <u>SML-5513</u>	Requested TAT (Days) <u>45</u>	P.O. Received Yes [] No []	
INSPECTION			
1. Custody seals on shipping container intact?	Yes [<u>✓</u>]	No []	N/A []
2. Custody seals on shipping container dated & signed?	Yes [<u>✓</u>]	No []	N/A []
3. Custody seals on sample containers intact?	Yes [<u>✓</u>]	No []	N/A []
4. Custody seals on sample containers dated & signed?	Yes [<u>✓</u>]	No []	N/A []
5. Cooler Temperature: _____	Packing material is: Wet [<u>✓</u>]		Dry []
6. Number of samples in shipping container: <u>2</u>			
7. Number of containers per sample: _____ (Or see CoC <u>✓</u>)			
8. Paperwork agrees with samples?	Yes [<u>✓</u>]	No []	
9. Samples have: Tape [<u>✓</u>] Hazard labels [] Rad labels [] Appropriate sample labels [<u>✓</u>]			
10. Samples are: In good condition [<u>✓</u>] Leaking [] Broken Container [] Missing []			
11. Describe any anomalies: <u>All the labels are wet</u>			
13. Was P.M. notified of any anomalies? Yes [] No [] Date _____			
14. Received by <u>AC Corso</u> Date: <u>10-3-00</u> Time: <u>10:00</u>			

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Beechtel Hanford (PNNL) Date: 10-3-00

Ice chest # or description	SML 550					
Thermometer: time in	10:30					
Thermometer: time out	11:00					
Thermometer reading	6°C					
Thermometer number	1132					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	yes					
Custody seals dated?	yes					
Custody seals signed?	yes					
Custody seals on samples?	yes					
Ice chest scanned for activity?	yes					

* Temperature is in degrees centigrade.

Technician: JK Corso

Comments: _____

Contractor WM TS	OFF-SITE PROPERTY CONTROL	CONTROL NO. <i>(To be obtained from PROPERTY MANAGEMENT)</i> W0100001
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Department	WELL SERVICES	Section	ENVIRONMENTAL	Unit	SAMPLING
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57783

BC-6001-579 (01/95)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Beehtel Hanford (ANAL)</u>		Date/Time received <u>10-3-00 10:14</u>	
CoC No. <u>COO-035-3</u>			
Container I.D. No. <u>SML-549</u>		Requested TAT (Days) <u>45</u> 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: <u>2</u>		
7.	Number of containers per sample: _____ (Or see CoC <u>4</u>)		
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: <u>All the labeling is wet</u>		
13.	Was P.M. notified of any anomalies? Yes [] No [] Date _____		
14.	Received by <u>JPK/aso</u> Date: <u>10-3-00</u> Time: <u>10:07</u>		

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford (PNNL) Date: 10-7-02

Ice chest # or description	SML 544					
Thermometer: time in	13:10					
Thermometer: time out	13:56					
Thermometer reading	6°C					
Thermometer number	2182					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	Yes					
Custody seals dated?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: J. Curran

Comments: _____

AIR OVERNIGHT

Contractor WMTS	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W0100001
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PART I - TO BE COMPLETED BY ORIGINATOR

Department WELL SERVICES	Section ENVIRONMENTAL	Unit SAMPLING
The following items are to be shipped from ☒ Contractor ☐ Vendor		
Routing ☒ Prepaid ☐ Collect		
Shipped to Company THERMO/RETEC		Off-site Custodian KEVIN JOHNSON
Address 2030 WRIGHT AVE		On-site Custodian JG HOGAN
City RICHMOND	State CA Zip Code 94804	Payroll No. 57783
Country		

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
6		ENVIRONMENTAL WATER SAMPLES PACKED ON WET ICE COOLER # <u>SML 548</u> WEIGHT <u>65</u> <u>SML 558</u> <u>68</u> <u>GWS 107</u> <u>69</u> <u>SML 1</u> <u>67</u> <u>SML 549</u> <u>62</u> <u>SML 462</u> <u>70</u> SAMPLES CONTAIN RADIOACTIVE MATERIAL THAT DOES NOT MEET DOT LIMITS OR EXCEED LAB ACCEPTANCE CRITERIA	

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

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. _____
☐ Business Trip
☐ Off-site Assignment
☐ Shipment to Subcontractor. List Subcontract No. _____
☒ Other (Please specify) **REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE**

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

RM Clearance for Public Release JG Hogan	RM Survey No. N/A	Date 10-2-00
Location of and Contact for Property (Name/Phone No./Bldg./Area) JG HOGAN / 373-7063 / 6209 / 600		
Date Ready for Shipment 10-2-00	Cost Code to be Charged R4000 112357/ES20	Approximate Date This Property will be Returned
Originated By RELINQUISHED BY:	Date 10-2-00	Authorized By [Signature] Date 10-2-00
Property Representative Signature	Date	Property Management Approval [Signature] Date 10/2/00

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature [Signature]	Date 10/2/00
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DISTRIBUTION (AFTER FINAL SIGNATURES)

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

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Bechtel Hanford (PNNL)</u>		Date/Time received <u>10-3-00 10:10</u>	
CoC No. <u>C00-035-5</u>			
Container I.D. No. <u>SML-1</u>		Requested TAT (Days) <u>45</u> 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: <u>2</u>		
7.	Number of containers per sample: _____ (Or see CoC <u>4</u>)		
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: <u>all the labels are wet</u>		
13.	Was P.M. notified of any anomalies? Yes ☐ No ☐ Date _____		
14.	Received by <u>JRC</u> Date: <u>10-3-00</u> Time: <u>10:10</u>		

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford

Date: 10-3-99

Ice chest # or description	5ML 1					
Thermometer: time in	10:46					
Thermometer: time out	11:10					
Thermometer reading	8°C					
Thermometer number	6536					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	Yes					
Custody seals dated?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: _____

Comments: _____

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Bachtel Hanford (PNNL)</u>	Date/Time received <u>10-3-00 10:00</u>		
CoC No. <u>COO-035-8</u>			
Container I.D. No. <u>SML-1</u>	Requested TAT (Days) <u>45</u>	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: <u>2</u>			
7. Number of containers per sample: _____ (Or see CoC <u>L</u>)			
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: <u>All the labeling is wet</u>			
13. Was P.M. notified of any anomalies? Yes [] No [] Date _____			
14. Received by <u>JRCano</u> Date: <u>10-3-00</u> Time: <u>10:00</u>			

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____

Contractor WM TS	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W0100001
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PART I - TO BE COMPLETED BY ORIGINATOR

Department WELL SERVICES	Section ENVIRONMENTAL	Unit SAMPLING
The following items are to be shipped from		☒ Contractor ☐ Vendor
Routing		☒ Prepaid ☐ Collect
Shipped to Company THERMO/RETEC Address 2030 WRIGHT AVE City RICHMOND State CA Zip Code 94804 Country	Off-site Custodian KEVIN JOHNSON On-site Custodian JG HOGAN Payroll No. 57783	

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
6		ENVIRONMENTAL WATER SAMPLES PACKED ON WET ICE COOLER # <u>SML 548</u> WEIGHT <u>65</u> <u>SML 558</u> <u>68</u> <u>GWS 107</u> <u>69</u> <u>SML 1</u> <u>67</u> <u>SML 549</u> <u>62</u> <u>SML 462</u> <u>70</u> SAMPLES CONTAIN RADIOACTIVE MATERIAL THAT DOES NOT MEET DOT LIMITS OR EXCEED LAB ACCEPTANCE CRITERIA	

☐ Classified	☒ Unclassified	☐ Shipped Under DOE Contract	☐ Shipped Under Contractor's Use Permit Contract
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Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.		
RM Clearance for Public Release JG Hogan	RM Survey No. N/A	Date 10-2-00

Location of and Contact for Property (Name/Phone No./Bldg./Area) JG HOGAN / 373-7063 / 6209 / 600			
Date Ready for Shipment 10-2-00	Cost Code to be Charged R4000	Approximate Date This Property will be Returned	
Originated By RELINQUISHED BY:	Date 10-2-00	Authorized By [Signature]	Date 10-2-00
Property Representative Signature	Date	Property Management Approval [Signature]	Date 10/2/00

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature [Signature]	Date 10/2/00
DISTRIBUTION (AFTER FINAL SIGNATURES)	
White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management	

Contractor WMTS	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W0100001
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PART I - TO BE COMPLETED BY ORIGINATOR

Department WELL SERVICES	Section ENVIRONMENTAL	Unit SAMPLING
The following items are to be shipped from ☒ Contractor ☐ Vendor		
Routing ☒ Prepaid ☐ Collect		
Shipped to Company THERMO/RETEC Address 2030 WRIGHT AVE City RICHMOND State CA Zip Code 94804 Country		Off-site Custodian KEVIN JOHNSON On-site Custodian JG HOGAN Payroll No. 57783

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
6		ENVIRONMENTAL WATER SAMPLES PACKED ON WET ICE COOLER # <u>SML 548</u> WEIGHT <u>65</u> <u>SML 558</u> <u>68</u> <u>GWS 107</u> <u>69</u> <u>SML 1</u> <u>67</u> <u>SML 549</u> <u>62</u> <u>SML 462</u> <u>70</u> SAMPLES CONTAIN RADIOACTIVE MATERIAL THAT DOES NOT MEET DOT LIMITS OR EXCEED LAB ACCEPTANCE CRITERIA	

☐ Classified	☒ Unclassified	☐ Shipped Under DOE Contract	☐ Shipped Under Contractor's Use Permit Contract
Necessity for the off-site use of this property ☐ Required for Project Work. List Project No. _____ ☐ Business Trip ☐ Off-site Assignment ☐ Shipment to Subcontractor. List Subcontract No. _____ ☒ Other (Please specify) <u>REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE</u>			

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.			
RM Clearance for Public Release JG Hogan	RM Survey No. N/A	Date 10-2-00	
Location of and Contact for Property (Name/Phone No./Bldg./Area) JG HOGAN / 373-7063 / 6209 / 600			
Date Ready for Shipment 10-2-00	Cost Code to be Charged R4000	Approximate Date This Property will be Returned	
Originated By RELINQUISHED BY:	Date 10-2-00	Authorized By [Signature]	Date 10-2-00
Property Representative Signature	Date	Property Management Approval [Signature]	Date 10/2/00

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature [Signature]	Date 10/2/00
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DISTRIBUTION (AFTER FINAL SIGNATURES)

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

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bectel Hanford (PNNL) Date: 10-3-06

Ice chest # or description	<u>SML</u> <u>548</u>					
Thermometer: time in	<u>3:10</u>					
Thermometer: time out	<u>3:50</u>					
Thermometer reading	<u>4°C</u>					
Thermometer number	<u>2132</u>					
Correction factor	<u>—</u>					
Actual temperature*	<u>—</u>					
Custody seals on ice chest intact?	<u>Yes</u>					
Custody seals dated?	<u>Yes</u>					
Custody seals signed?	<u>Yes</u>					
Custody seals on samples?	<u>Yes</u>					
Ice chest scanned for activity?	<u>Yes</u>					

* Temperature is in degrees centigrade.

Technician: Eric J. Aguirre

Comments: _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Buchtel Hanford (PNNL) Date: 10-3-00

Ice chest # or description	GWS 107					
Thermometer: time in	13:00					
Thermometer: time out	13:40					
Thermometer reading	4°C					
Thermometer number	6536					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	yes					
Custody seals dated?	yes					
Custody seals signed?	yes					
Custody seals on samples?	yes					
Ice chest scanned for activity?	yes					

* Temperature is in degrees centigrade.

Technician: JP Curcio

Comments: _____

Contractor WMTS	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W0100001
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PART I - TO BE COMPLETED BY ORIGINATOR

Department WELL SERVICES	Section ENVIRONMENTAL	Unit SAMPLING
The following items are to be shipped from		☒ Contractor ☐ Vendor
Routing		☒ Prepaid ☐ Collect
Shipped to Company THERMO/RETEC Address 2030 WRIGHT AVE City RICHMOND State CA Zip Code 94804 Country	Off-site Custodian KEVIN JOHNSON On-site Custodian JG HOGAN	Payroll No. 57783

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
6		ENVIRONMENTAL WATER SAMPLES PACKED ON WET ICE COOLER # <u>SML 548</u> WEIGHT <u>65</u> <u>SML 558</u> <u>68</u> <u>GWS 107</u> <u>69</u> <u>SML 1</u> <u>67</u> <u>SML 549</u> <u>62</u> <u>SML 462</u> <u>70</u> SAMPLES CONTAIN RADIOACTIVE MATERIAL THAT DOES NOT MEET DOT LIMITS OR EXCEED LAB ACCEPTANCE CRITERIA	

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

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. _____
☐ Business Trip
☐ Off-site Assignment
☐ Shipment to Subcontractor. List Subcontract No. _____
☒ Other (Please specify) REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE

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

RM Clearance for Public Release JG Hogan	RM Survey No. N/A	Date 10-2-00
Location of and Contact for Property (Name/Phone No./Bldg./Area) JG HOGAN / 373-7063 / 6209 / 600		
Date Ready for Shipment 10-2-00	Cost Code to be Charged R4000 112357/ES20	Approximate Date This Property will be Returned
Originated By RELINQUISHED BY:	Date 10-2-00	Authorized By [Signature] Date 10-2-00
Property Representative Signature	Date	Property Management Approval [Signature] Date 10/2/00

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature [Signature]	Date 10/2/00
DISTRIBUTION (AFTER FINAL SIGNATURES)	
White - Property Management	Yellow - Shipping
Green - Accounts Payable	Pink - Originator
Goldenrod - Property Management	

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client:	<u>BECHTEL HANFORD INC. (PNNL)</u>	Date/Time received	<u>10-03-00 10: Am</u>
CoC No.	<u>COO -035-2</u>		
Container I.D. No.	<u>SML 548</u>	Requested TAT (Days)	<u>75</u> 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: <u>2</u>		
7.	Number of containers per sample: <u>PLS check</u> (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 <u>E. Legu</u> Date: <u>10-03-00</u> Time: <u>10: Am</u>		

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford (PNNL) Date: 10-03-07

Ice chest # or description	<u>SML462</u>					
Thermometer: time in	<u>15:15</u>					
Thermometer: time out	<u>15:45</u>					
Thermometer reading	<u>4.5°C</u>					
Thermometer number	<u>6536</u>					
Correction factor	<u>—</u>					
Actual temperature*	<u>—</u>					
Custody seals on ice chest intact?	<u>yes</u>					
Custody seals dated?	<u>yes</u>					
Custody seals signed?	<u>No</u>					
Custody seals on samples?	<u>yes</u>					
Ice chest scanned for activity?	<u>yes</u>					

* Temperature is in degrees centigrade.

Technician: *[Signature]*

Comments: _____

H12 OVERNIGHT

Contractor WMTS	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W0100001
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PART I - TO BE COMPLETED BY ORIGINATOR

Department WELL SERVICES	Section ENVIRONMENTAL	Unit SAMPLING
The following items are to be shipped from		☒ Contractor ☐ Vendor
Routing		☒ Prepaid ☐ Collect
Shipped to Company THERMO/RETEC Address 2030 WRIGHT AVE City RICHMOND State CA Zip Code 94804 Country		Off-site Custodian KEVIN JOHNSON On-site Custodian JG HOGAN Payroll No. 57783
Qty. 6	Property No.	Description (Include Manufacture Name, Model, Serial No.) ENVIRONMENTAL WATER SAMPLES PACKED ON WET ICE COOLER # SML 548 WEIGHT 65 SML 558 68 GWS 107 69 SML 1 67 SML 549 62 SML 462 70 SAMPLES CONTAIN RADIOACTIVE MATERIAL THAT DOES NOT MEET DOT LIMITS OR EXCEED LAB ACCEPTANCE CRITERIA
☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract		

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. _____
☐ Business Trip
☐ Off-site Assignment
☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) **REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE**

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

RM Clearance for Public Release JG Hogan	RM Survey No. N/A	Date 10-2-00
Location of and Contact for Property (Name/Phone No./Bldg./Area) JG HOGAN / 373-7063 / 6209 / 600		
Date Ready for Shipment 10-2-00	Cost Code to be Charged R4000 112357/ES20	Approximate Date This Property will be Returned
Originated By RELINQUISHED BY:	Date 10-2-00	Authorized By [Signature] Date 10-2-00
Property Representative Signature	Date	Property Management Approval [Signature] Date 10/2/00

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature [Signature]	Date 10/2/00
DISTRIBUTION (AFTER FINAL SIGNATURES)	
White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management	

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>BECHTEL HANFORD INC. (PNNL)</u>	Date/Time received <u>10-03-02</u> <u>10:AM</u>		
CoC No. <u>C00-035-4</u>			
Container I.D. No. <u>SML-462</u>	Requested TAT (Days) <u>45</u>	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:	<u>2</u>		
7. Number of containers per sample:	<u>PLS CHECK THE</u> (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 <u>E. Segura</u> Date: <u>10-03-02</u> Time: <u>10:AM</u>			

Customer Sample No.	cpm	mr/hr

Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____