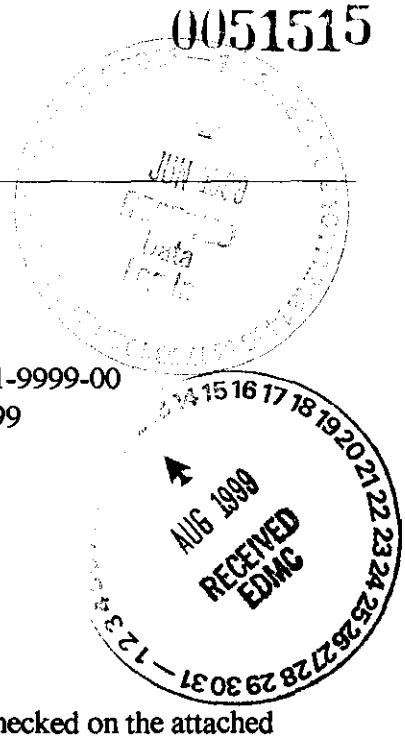
RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-029
RFW# : 9904L657
SDG/SAF# : H0381/B99-029

W.O.# : 10985-001-001-9999-00
Date Received: 04-09-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachate samples.

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

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

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

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

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. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The TCLP extract from sample B0V6P5 was selected for the matrix spike (MS) for this analytical batch. The MS recovery was greater than 50% as per method criteria. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-13-99
Date

mld/m04-657

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9904L657

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	__6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	__6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	__6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	__6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	__7470A [3] __7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	__6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	__6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ **Method:**_____

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.

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INORGANICS DATA SUMMARY REPORT 04/28/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0V6P5	Chromium, TCLP Leachate	3700	UG/L	4.2	1.0
-004	B0V6P7	Chromium, TCLP Leachate	3610	UG/L	4.2	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/28/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0234-MB1	Chromium, TCLP Leachate	10.5		UG/L	4.2	1.0
BLANK2	99L0234-MB2	Chromium, TCLP Leachate	5.1		UG/L	4.2	1.0
BLANK3	99L0234-MB3	Chromium, TCLP Leachate	4.2	u	UG/L	4.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/28/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B0V6P5	Chromium, TCLP Leachat	8580	3700	5000	97.6	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/28/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	B0V6P5	Chromium, TCLP Leachate	3700	3600	2.7	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/28/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0234-LC1	Chromium, LCS	489	500	UG/L	97.8

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-029

DATE RECEIVED: 04/09/99 RFW LOT # :9904L657

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V6P5						
TCLP	001	SO	99LTO044	04/06/99	04/21/99	04/22/99
B0V6P7						
TCLP	002	SO	99LTO044	04/06/99	04/21/99	04/22/99
B0V6P5						
CHROMIUM, TCLP LEACH	003	W	99L0234	04/22/99	04/22/99	04/25/99
CHROMIUM, TCLP LEACH	003 REP	W	99L0234	04/22/99	04/22/99	04/25/99
CHROMIUM, TCLP LEACH	003 MS	W	99L0234	04/22/99	04/22/99	04/25/99
B0V6P7						
CHROMIUM, TCLP LEACH	004	W	99L0234	04/22/99	04/22/99	04/25/99

LAB QC:

CHROMIUM LABORATORY	LC1 BS	W	99L0234	N/A	04/22/99	04/25/99
CHROMIUM, TCLP LEACH	MB1	W	99L0234	N/A	04/22/99	04/25/99
CHROMIUM, TCLP LEACH	MB2	W	99L0234	N/A	04/22/99	04/25/99
CHROMIUM, TCLP LEACH	MB3	W	99L0234	N/A	04/22/99	04/25/99

RECRA LabNet Use Only

9904L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNe

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-029

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 4/9/99 Date Due: 5/9/99

Account #:

Refrigerator #

#/Type Container												3	3				
	Liquid											1g	1g				
	Solid																
Volume	Liquid											250	500				
	Solid																
Preservatives																	

ANALYSES REQUESTED →	ORGANIC								INORG								
	VOA	BNA	Pest/ PCB	Herb					Metal	CN							
RECRA LabNet Use Only →									MCETC		ICNO3	ITCLP					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected												
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B0V6P5			SO	4/6/99	0825					✓	✓						
	2	7			〃	〃	0845					✓	✓						
	3	5 tclp of 001			L	*	-				✓								
	4	7 〃 2			〃	〃	-				✓								

Special Instructions:

Soft # B99-029

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. * see labchron
3.
4.
5.
6.

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 3.3 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
* 42357952407

Relinquished by	Received by	Date	Time
Fed ex	Forler	4/9/99	0930
	for D. Smith		

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

011

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-15	Page 1 of 1

Collector Renee Nielson	**Company Contact** Thomas E. Pickett **Telephone No.** 509-373-4630	**Project Coordinator** TRENT, SJ	**Price Code** IV/FA **Data Turnaround** 45 Days
Project Designation 100-KR-4 Pump & Treat - Resin Sampling FY 99	**Sampling Location** 100-KR-4 Pump and Treat	**SAF No.** B99-029	
Ice Chest No. ERCFS-002	**Field Logbook No.** EL-1381-1	**Method of Shipment** Federal Express	
Shipped To ~~TMA/REGRA~~ RIN 4/5/99 RECRA LabNet	**Offsite Property No.** A990100	**Bill of Lading/Air Bill No.** 423579524607	
		COA R10KR4C570	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
None noted on SAF.

Preservation	None	None	None	None	None	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	60mL	60mL	120mL	250mL	500mL			
SAMPLE ANALYSIS	Activity Scan	Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	IC Anions - 300.0 (Nitrate)	Metals by ICP (TCLP) - 1311/6010A (Chromium)			

Sample No.	Matrix *	Sample Date	Sample Time									
B0V6P5	Other Solid	4-6-99	0825					X	X			B0V6P4
B0V6P7	Other Solid	4-6-99	0845					X	X			B0V6P6

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

Relinquished By	Date/Time	Received By	Date/Time
R Nielson / R. Nielson	4/6/99 1015	Ref. IA	4/6/99 1015
Ref IA	4/8/99 10:00	R Nielson / R. Nielson	4/8/99 10:00
R Nielson / R. Nielson	4/8/99 1630	Fed Ex	
Fed Ex	4.9.99/0930	D J Smith	4.9.99/0930

SPECIAL INSTRUCTIONS

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

012

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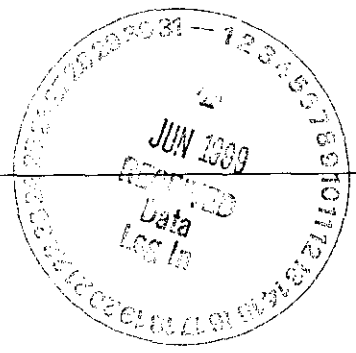
Virtual Laboratories Everywhere



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-029
RFW# : 9904L657
SDG# : H0381
SAF# : B99-029

W.O. # : 10985-001-001-9999-00
Date Received: 04-09-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.

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

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

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

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

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

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

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

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

for Pat Ez
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-14-99
Date

njp\i04-657

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

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			__ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod)__ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Nitrate Method: EPA 300.0

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., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/05/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V6P5	% Solids	46.9	%	0.01	1.0
		Nitrate by IC	10	MG/KG	2.7	1.0
-002	B0V6P7	% Solids	45.7	%	0.01	1.0
		Nitrate by IC	12	MG/KG	2.7	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/05/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LXC049-MB1	Nitrate by IC	1.2 u	MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/05/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V6P5	Nitrate by IC	81	10	53	133.3	1.0
BLANK10	99LXC049-MB1	Nitrate by IC	24	1.2 u	25	96.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/05/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9904L657

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V6P5	Nitrate by IC	10	10	2.2	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-029

DATE RECEIVED: 04/09/99 RFW LOT # :9904L657

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V6P5						
% SOLIDS	001	SO	99L%S053	04/06/99	04/15/99	04/16/99
NITRATE BY IC	001	SO	99LXC049	04/06/99	04/30/99	04/30/99
NITRATE BY IC	001 REP	SO	99LXC049	04/06/99	04/30/99	04/30/99
NITRATE BY IC	001 MS	SO	99LXC049	04/06/99	04/30/99	04/30/99
TCLP	001	SO	99LTO044	04/06/99	04/21/99	04/22/99
B0V6P7						
% SOLIDS	002	SO	99L%S053	04/06/99	04/15/99	04/16/99
NITRATE BY IC	002	SO	99LXC049	04/06/99	04/30/99	04/30/99
TCLP	002	SO	99LTO044	04/06/99	04/21/99	04/22/99
LAB QC:						
NITRATE BY IC	MB1	S	99LXC049	N/A	04/30/99	04/30/99
NITRATE BY IC	MB1 BS	S	99LXC049	N/A	04/30/99	04/30/99

RECRA LabNet Use Only

9904L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-Hanford B99-029

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 4/9/99 Date Due 5/9/99

Account #

Refrigerator #																				
#/Type Container	Liquid											3	3						600
	Solid											1g	1g						
Volume	Liquid											250	500						
	Solid																		
Preservatives																			

Leach

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

RECRA LabNet Use Only

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	MCLTC	ICNOS	ITCLP
	001	BØV6P5			SO	4/6/99	0825		✓	✓
	2	7			⊥	⊥	0845		✓	✓
	3	5 tclp of 001			L	*	-	✓		
	4	7 ⊥ 2			⊥	⊥	-	✓		

Special Instructions:

Soft # B99-029

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. * see labchron
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 3.3 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
* 423579524607

Relinquished by	Received by	Date	Time
Fed ex	Fowler for D. Smith	4/9/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

*423579524601 33 9904L651

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-15	Page 1 of 1

Collector Renee Nielson	**Company Contact** Thomas E. Pickett **Telephone No.** 509-373-4630	**Project Coordinator** TRENT, SJ	**Price Code** IV/FA **Data Turnaround** 45 Days
Project Designation 100-KR-4 Pump & Treat - Resin Sampling FY 99	**Sampling Location** 100-KR-4 Pump and Treat	**SAF No.** B99-029	
Ice Chest No. ERCFS-002	**Field Logbook No.** EL-1381-1	**Method of Shipment** Federal Express	
Shipped To ~~TMA/RECRA~~ RIN 4/5/99 RECRA LabNet	**Offsite Property No.** A990100	**Bill of Lading/Air Bill No.** 423579524607	
		COA R10KR4C570	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	None	None	None	None	None	None				
	Type of Container	aG	aG	aG	aG	aG	aG	aG				
Special Handling and/or Storage None noted on SAF.	**No. of Container(s)** **Volume**	1 60mL	1 60mL	1 60mL	1 60mL	1 120mL	1 250mL	1 500mL				
SAMPLE ANALYSIS		Activity Scan	Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	IC Anions - 300.0 (Nitrate)	Metals by ICP (TCLP) - 1311/6010A (Chromium)				
Sample No.	Matrix *	Sample Date	Sample Time									
B0V6P5	Other Solid	4-6-99	0825					X	X		B0V6P4	
B0V6P7	Other Solid	4-6-99	0845					X	X		B0V6P6	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
R Nielson	4/6/99 1015	REF. IA	4/6/99 1015
REF IA	4/8/99 10:00	R Nielson / R. Nielson	4/8/99 10:00
R Nielson / R. Nielson	4/8/99 1130	Fed Ex	
Fed Ex	4.9.99/0930		4.9.99/0930

SPECIAL INSTRUCTIONS

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

H0381 - TMA/KR2CRA

Thermo Nutech
W.O. No. N9-04-062-7113

Bechtel Hanford Inc.
SDG H0381

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0381 is comprised of two solid samples designated under SAF No. B99-029 with a Project Designation of: 100-KR-4 Pump and Treat.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. All results were transmitted to Bechtel Hanford via fax on May 24, 1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the processing of the samples.

2.2 Isotopic Uranium Analyses

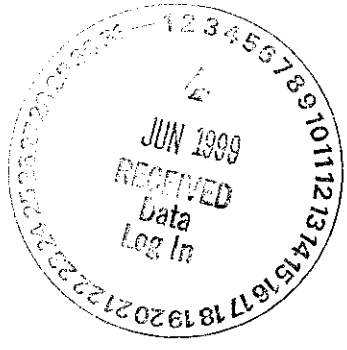
No problems were encountered during the processing of the samples.

2.3 Technetium-99 Analyses

No problems were encountered during the processing of the samples.

2.4 Tritium Analyses

No problems were encountered during the processing of the samples.



TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

SAMPLE SUMMARY

SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0V6P5	100-KR-4 Pump and Treat	SOLID		N904062-01	B99-029	B99-029-15	04/06/99 08:25
B0V6P7	100-KR-4 Pump and Treat	SOLID		N904062-02	B99-029	B99-029-15	04/06/99 08:45
Method Blank		SOLID		N904062-04	B99-029		
Lab Control Sample		SOLID		N904062-03	B99-029		
Duplicate (N904062-01)	100-KR-4 Pump and Treat	SOLID		N904062-05	B99-029		04/06/99 08:25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

QC SUMMARY

SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7113	B99-029-15	B0V6P5	SOLID	100.0			04/09/99	3	N904062-01	7113-001
		B0V6P7	SOLID	100.0			04/09/99	3	N904062-02	7113-002
		Method Blank	SOLID						N904062-04	7113-004
		Lab Control Sample	SOLID						N904062-03	7113-003
		Duplicate (N904062-01)	SOLID	100.0			04/09/99	3	N904062-05	7113-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

PREP BATCH SUMMARY

SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
U	SOLID	Uranium, Isotopic in Soil	6880-044	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6880-044	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6880-044	10.0	2			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6880-044	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

WORK SUMMARY

SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED BY	METHOD
B0V6P5			N904062-01	7113-001	H		05/08/99		Tritium in Soil
100-KR-4 Pump and Treat		SOLID	04/06/99	7113-001	SR		05/07/99		Total Strontium in Soil
B99-029-15	B99-029		04/09/99	7113-001	TC		05/10/99		Technetium 99 in Soil
				7113-001	U		05/07/99		Uranium, Isotopic in Soil
B0V6P7			N904062-02	7113-002	H		05/08/99		Tritium in Soil
100-KR-4 Pump and Treat		SOLID	04/06/99	7113-002	SR		05/07/99		Total Strontium in Soil
B99-029-15	B99-029		04/09/99	7113-002	TC		05/10/99		Technetium 99 in Soil
				7113-002	U		05/07/99		Uranium, Isotopic in Soil
Method Blank			N904062-04	7113-004	H		05/08/99		Tritium in Soil
		SOLID		7113-004	SR		05/07/99		Total Strontium in Soil
	B99-029			7113-004	TC		05/10/99		Technetium 99 in Soil
				7113-004	U		05/07/99		Uranium, Isotopic in Soil
Lab Control Sample			N904062-03	7113-003	H		05/08/99		Tritium in Soil
		SOLID		7113-003	SR		05/07/99		Total Strontium in Soil
	B99-029			7113-003	TC		05/10/99		Technetium 99 in Soil
				7113-003	U		05/07/99		Uranium, Isotopic in Soil
Duplicate (N904062-01)			N904062-05	7113-005	H		05/08/99		Tritium in Soil
100-KR-4 Pump and Treat		SOLID	04/06/99	7113-005	SR		05/07/99		Total Strontium in Soil
	B99-029		04/09/99	7113-005	TC		05/12/99		Technetium 99 in Soil
				7113-005	U		05/07/99		Uranium, Isotopic in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-029	Tritium in Soil	EPA906.0	2		1	1	1	5
SR	B99-029	Total Strontium in Soil		2		1	1	1	5
TC	B99-029	Technetium 99 in Soil	TC99TRLSC	2		1	1	1	5
U	B99-029	Uranium, Isotopic in Soil	UPLATE	2		1	1	1	5
TOTALS				8		4	4	4	20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/24/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0381

N904062-04 Method Blank

METHOD BLANK

SDG 7113 Client/Case no Hanford SDG-H0381
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N904062-04 Client sample id Method Blank
Dept sample id 7113-004 Material/Matrix SOLID
SAF No B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.005	0.049	0.083	0.50	U	H
Technetium 99	14133-76-7	0.122	0.085	0.26	0.50	U	TC
Uranium 233/234	U-233/234	0.010	0.019	0.074	0.30	U	U
Uranium 235	15117-96-1	0	0.023	0.089	0.30	U	U
Uranium 238	U-238	0	0.019	0.074	0.30	U	U
Total Strontium	SR-RAD	-0.064	0.17	0.22	1.0	U	SR

100-KR-4 Pump&Treat-Resin Smplg FY99

QC-BLANK 30565

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

N904062-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7113 Client/Case no Hanford SDG-H0381

Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N904062-03 Client sample id Lab Control Sample

Dept sample id 7113-003 Material/Matrix SOLID

SAF No B99-029

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	3.46	0.13	0.084	0.50		H	3.62	0.14	96	84-116	80-120
Technetium 99	28.9	0.58	0.16	0.50		TC	32.7	1.3	88	85-115	80-120
Uranium 233/234	4.72	0.57	0.28	0.30		U	4.75	0.19	99	80-120	80-120
Uranium 235	4.28	0.53	0.072	0.30		U	3.89	0.16	110	77-123	80-120
Uranium 238	5.12	0.59	0.27	0.30		U	4.90	0.20	104	79-121	80-120
Total Strontium	13.9	0.51	0.19	1.0		SR	12.6	0.50	110	81-119	

100-KR-4 Pump&Treat-Resin Smplg FY99

QC-LCS 30564

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

N904062-05 B0V6P5

DUPLICATE

SDG 7113 Client/Case no Hanford SDG-H0381

Contact L.A. Johnson Case no TRB-SBB-207925

DUPLICATE		ORIGINAL			
Lab sample id	N904062-05	Lab sample id	N904062-01	Client sample id	B0V6P5
Dept sample id	7113-005	Dept sample id	7113-001	Location/Matrix	100-KR-4 Pump and Treat SOLID
		Received	04/09/99	Collected	04/06/99 08:25
% solids	100.0	% solids	100.0	Custody/SAF No	B99-029-15 B99-029

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	7.53	0.19	0.090	0.50		H	7.50	0.19	0.087		0	22
Technetium 99	1.12	0.29	0.61	0.50		TC	1.54	0.31	0.52		32	52
Uranium 233/234	0.197	0.087	0.066	0.30	J	U	0.170	0.086	0.065	J	15	100
Uranium 235	0	0.021	0.079	0.30	U	U	0.010	0.021	0.079	U	-	
Uranium 238	0.103	0.052	0.066	0.30	J	U	0.170	0.069	0.065	J	49	96
Total Strontium	-0.007	0.13	0.18	1.0	U	SR	0.095	0.19	0.24	U	-	

100-KR-4 Pump&Treat-Resin Smplg FY99

QC-DUP#1 30566

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/24/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0381

N904062-01 B0V6P5

DATA SHEET

SDG	7113	Client/Case no	Hanford SDG-H0381
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904062-01	Client sample id	B0V6P5
Dept sample id	7113-001	Location/Matrix	100-KR-4 Pump and Treat SOLID
Received	04/09/99	Collected	04/06/99 08:25
% solids	100.0	Custody/SAF No	B99-029-15 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	7.50	0.19	0.087	0.50		H
Technetium 99	14133-76-7	1.54	0.31	0.52	0.50		TC
Uranium 233/234	U-233/234	0.170	0.086	0.065	0.30	J	U
Uranium 235	15117-96-1	0.010	0.021	0.079	0.30	U	U
Uranium 238	U-238	0.170	0.069	0.065	0.30	J	U
Total Strontium	SR-RAD	0.095	0.19	0.24	1.0	U	SR

100-KR-4 Pump&Treat-Resin Smplg FY99

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/24/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0381

N904062-02 B0V6P7

DATA SHEET

SDG	7113	Client/Case no	Hanford SDG-H0381
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904062-02	Client sample id	B0V6P7
Dept sample id	7113-002	Location/Matrix	100-KR-4 Pump and Treat SOLID
Received	04/09/99	Collected	04/06/99 08:45
% solids	100.0	Custody/SAF No	B99-029-15 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	7.46	0.18	0.086	0.50		H
Technetium 99	14133-76-7	1.86	0.29	0.55	0.50		TC
Uranium 233/234	U-233/234	0.187	0.087	0.065	0.30	J	U
Uranium 235	15117-96-1	0.021	0.021	0.079	0.30	U	U
Uranium 238	U-238	0.102	0.052	0.065	0.30	J	U
Total Strontium	SR-RAD	0.086	0.17	0.22	1.0	U	SR

100-KR-4 Pump&Treat-Resin Smplg FY99

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6880-044											
B0V6P5	N904062-01			7113-001	0.170 J	U	0.170 J	100	65	6	13
B0V6P7	N904062-02			7113-002	0.187 J	U	0.102 J	183	127	21	23
BLK (QC ID=30565)	N904062-04			7113-004	U	U	U				
LCS (QC ID=30564)	N904062-03			7113-003	ok	ok	ok				
Duplicate (N904062-01)	N904062-05			7113-005	ok J	- U	ok J	191	128	0	20
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100-KR-4 Pump&Treat-Resin Smplg FY99							Averages	158		9	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-044 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.44																
B0V6P5	N904062-01			0.079	1.02			94		150			31	05/07/99	05/07	SS-009
B0V6P7	N904062-02			0.079	1.01			92		150			31	05/07/99	05/07	SS-010
BLK (QC ID=30565)	N904062-04			0.089	1.00			82		150				05/07/99	05/07	SS-012
LCS (QC ID=30564)	N904062-03			0.28	1.00			105		150				05/07/99	05/07	SS-011
Duplicate (N904062-01) (QC ID=30566)	N904062-05			0.079	1.02			89		150			31	05/07/99	05/07	SS-013
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.12 ± 0.18
YIELD 92 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6880-044						
B0V6P5	N904062-01			7113-001	U	
B0V6P7	N904062-02			7113-002	U	
BLK (QC ID=30565)	N904062-04			7113-004	U	
LCS (QC ID=30564)	N904062-03			7113-003	ok	
Duplicate (N904062-01)	N904062-05			7113-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
100-KR-4 Pump&Treat-Resin Smplg FY99						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM KeV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-044	2σ prep error 10.0 %			Reference Lab Notebook 6880 pg.44												
B0V6P5	N904062-01			0.24	1.04			72		400			31	05/07/99	05/07	GRB-201
B0V6P7	N904062-02			0.22	1.02			73		400			31	05/07/99	05/07	GRB-202
BLK (QC ID=30565)	N904062-04			0.22	1.00			80		400				05/07/99	05/07	GRB-204
LCS (QC ID=30564)	N904062-03			0.19	1.00			75		200				05/07/99	05/07	GRB-230
Duplicate (N904062-01) (QC ID=30566)	N904062-05			0.18	1.04			81		400			31	05/07/99	05/07	GRB-217
Nominal values and limits from method				1.0	1.00					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.21 ± 0.049
YIELD 76 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/24/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Test TC Matrix SOLID
SDG 7113
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99
Preparation batch 6880-044					
B0V6P5	N904062-01			7113-001	1.54
B0V6P7	N904062-02			7113-002	1.86
BLK (QC ID=30565)	N904062-04			7113-004	U
LCS (QC ID=30564)	N904062-03			7113-003	ok
Duplicate (N904062-01)	N904062-05			7113-005	ok
Nominal values and limits from method				RDLs (pCi/g)	0.50
100-KR-4 Pump&Treat-Resin Smplg FY99					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-044 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.44																
B0V6P5	N904062-01			0.52	1.00			45		200			34	05/07/99	05/10	GRB-230
B0V6P7	N904062-02			0.55	1.00			46		200			34	05/07/99	05/10	GRB-231
BLK (QC ID=30565)	N904062-04			0.26	2.00			66		101				05/07/99	05/10	GRB-217
LCS (QC ID=30564)	N904062-03			0.16	2.00			75		200				05/07/99	05/10	GRB-232
Duplicate (N904062-01) (QC ID=30566)	N904062-05			0.61	1.00			39		200			36	05/07/99	05/12	GRB-203
Nominal values and limits from method				0.50	2.00			20-105		50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.42 ± 0.40
YIELD 54 ± 31

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/24/99

Test H Matrix SOLID
SDG 7113
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0381

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium
Preparation batch 6880-044					
B0V6P5	N904062-01			7113-001	7.50
B0V6P7	N904062-02			7113-002	7.46
BLK (QC ID=30565)	N904062-04			7113-004	U
LCS (QC ID=30564)	N904062-03			7113-003	ok
Duplicate (N904062-01)	N904062-05			7113-005	ok
Nominal values and limits from method				RDLs (pCi/g)	0.50
100-KR-4 Pump&Treat-Resin Smplg FY99					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-044 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.44																
B0V6P5	N904062-01			0.087	19.7			100		120			32	05/06/99	05/08	LSC-005
B0V6P7	N904062-02			0.086	19.4			100		120			32	05/06/99	05/08	LSC-005
BLK (QC ID=30565)	N904062-04			0.083	20.0			100		120				05/06/99	05/08	LSC-005
LCS (QC ID=30564)	N904062-03			0.084	20.0			100		120				05/06/99	05/08	LSC-005
Duplicate (N904062-01) (QC ID=30566)	N904062-05			0.090	19.4			100		120			32	05/06/99	05/08	LSC-005
Nominal values and limits from method				0.50	20.0					25			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.086 ± 0.005
YIELD 100 ± 0

Lab id TMANC
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Form DVD-CMS
Version 3.06
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SDG 7113
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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Form DVD-RG
Version 3.06
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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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REPORT GUIDE

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DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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GUIDE, cont.

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
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DATA SHEET

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

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

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

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

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REPORT GUIDE

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

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

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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Form DVD-RG
Version 3.06
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Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0381

MATRIX SPIKE

for the recovery.

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

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

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Form DVD-RG
Version 3.06
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REPORT GUIDE

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

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METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-029-15

Collector Renee Nielson	**Company Contact** Thomas E. Pickett	**Telephone No.** 509-373-4630	**Project Coordinator** TRENT, SJ
Project Designation 100-KR-4 Pump & Treat - Resin Sampling FY 99	**Sampling Location** 100-KR-4 Pump and Treat		**SAF No.** B99-029
Ice Chest No. ~~SMC-545~~ RUN 4/5/99 ERC96-021	**Field Logbook No.** EL-1381-1		**Method of Shipment** Federal Express
Shipped To ~~TMA/REGRA~~ RUN 4/5/99 Thermo Retec	**Offsite Property No.** A990099		**Bill of Lading/Air Bill No.** 423579524618
			COA R10KR4C570

Price Code IV/FA **Data Turnaround** 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

SDG 40381

Special Handling and/or Storage
None noted on SAF.

Preservation	None	None	None	None	None	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s) / Volume	1 / 60mL	1 / 60mL	1 / 60mL	1 / 60mL	1 / 120mL	1 / 250mL	1 / 500mL			
SAMPLE ANALYSIS	Activity Scan	Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	IC Anions - 300.0 (Nitrate)	Metals by ICP (TCLP) - 1311/6010A (Chromium)			

Sample No.	Matrix *	Sample Date	Sample Time									
B0V6P5	Other Solid	4-6-99	0825	X	X	X	X	X				B0V6P4
B0V6P7	Other Solid	4-6-99	0845	X	X	X	X	X				B0V6P6

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	4/6/99 1015	REF. IA	4/6/99 1015
REF. IA	4/8/99 1000	Renee Nielson / R. Nielson	4/8/99 1000
Renee Nielson / R. Nielson	4/8/99 1130	Fed Ex	4-8-99
Fed Ex 4-9-99 1100		Eleanor J. Rorso	4-9-99 (1:00

SPECIAL INSTRUCTIONS

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 4-9-99 11:00

CoC No. B99-001-134, B99-002-78, B99-029-15
7, 15 & 45

Container I.D. No. _____ Requested TAT (Days) _____ 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: 10			
7.	Number of containers per sample: _____ (Or see CoC ✓)			
8.	Paperwork agrees with samples?	Yes [✓]	No [ ]	
9.	Samples have: Tape [✓] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]			
10.	Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]			

11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 4-9-99

14. Received by JAlonso Date: 4-9-99 Time: 11:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI - Hanford		A990099

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ERC Engineering Support	Field & Analytical Support	Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Prepaid ☐ Collect

Shipped to Company Address City State Zip Code Country	Thermo Retec 2030 Wright Ave Richmond, CA 94804-0040 (510)235-2633 Attn: Larry Johnson
Off-site Custodian	
On-site Custodian / Payroll No.	

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	54 lbs.	Sample No.: B0V1W1, B0V1W2, B0V1W3, B0V1W4, B0V1W5, B0V1W6, B0V6P5, B0V6P7, B0V117, B0V118 Cooler ID: ERC96-021 Polycooler with environmental samples packed with packing peanuts. BILL OF LADING # 423579524618	N/A
1	lbs.	Sample No.: Cooler ID: Polycooler with environmental samples packed with packing peanuts. BILL OF LADING #	N/A

☐ 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)* _____

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

RM Clearance for Public Release	RM Survey No.	Date

Location of and Contact for Property *(Name/Phone No./Bldg./Area)*
Renee Nielson/(509)372-9604/3728 Bldg/300 Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4/8/99	R10KR4657Ø	

Originated By	Date	Authorized By	Date
Renee Nielson	4/8/99	Renee Nielson	4/8/99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
B Christensen	4/8/99	B Christensen	4/8/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	4-8-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

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