WASTE MANAGEMENT FEDERAL SERVICES
OF HANFORD, INC.
A WASTE MANAGEMENT COMPANY

P.O. Box 700
Richland, WA 99352-0700

0050521

January 20, 1999

WMH-9950425

J. H. Kessner, Program Manager
Analytical Services
Bechtel Hanford Inc. H9-03
3350 George Washington Way
Richland, Washington 99352

JAN 1999
RECEIVED
Data
Log In

Dear Ms. Kessner:

INTERIM RESULTS FOR THE 233-S PLUTONIUM CONCENTRATION FACILITY (233-S) SAMPLES

Reference: External letter, T. E. Logan, BHI, to J. L. Jacobsen, FDH, "Letter of Instruction for the 233-S Plutonium Concentration Facility Sample Analysis," 047467, dated November 24, 1998.

This letter presents the 60-Day interim results for the two samples received from the 233-S Facility on December 2, 1998. Samples BOT9W8 and BOR5R3 were considered the first sample delivery group. The limited set of analyses indicated on the attached copy of the Request for Sample Analysis were performed in accordance with the *Letter of Instruction for the 233-S Plutonium Concentration Facility Sample Analysis* referenced above.

Sample BOR5R3 was a dry, flowing granular soil sample. The color was light gray and the texture varied from a fine ash to a desert sand consistency. Approximately 80 percent of the sample consisted of material with approximately 2 mm particle size. The remaining 20 percent of the sample consisted of large flat "chunks" of material ranging from 5/8" to 1 inch in length/width and from 1/8" to 3/16" in thickness. In an attempt to obtain a representative sample for the acid digestion, one piece measuring approximately ¼" square was placed in the vial with the finer sand material. The sample reacted by foaming when contacted with 2 M nitric acid.

Sample BOT9W8 was a wet solid with no separable liquid. Approximately 70 percent of the material was black and gray in color, with the consistency of wet beach sand. The remainder of the sample consisted of larger gravel-like pieces that were approximately 3-5 mm in diameter. The gravel-like pieces were too large to subsample to obtain a more representative aliquot. Therefore, the portion used for the acid digestion consisted only of the finer sand material. The sample frothed slightly upon shaking and reacted by foaming when contacted with 2 M nitric acid.

The attachments provide the following information:

Attachment 1: Sample Breakdown Diagrams
Attachment 2: Interim Data Summary Report
Attachment 3: Chain-of-Custody and Request for Sample Analysis forms

If you have any questions, please call me at 373-4314.

Very Truly Yours,

R. A. Esch, Project Coordinator
Facility Planning
222-S Laboratory
Waste Management Laboratory

ap

Attachments (3)

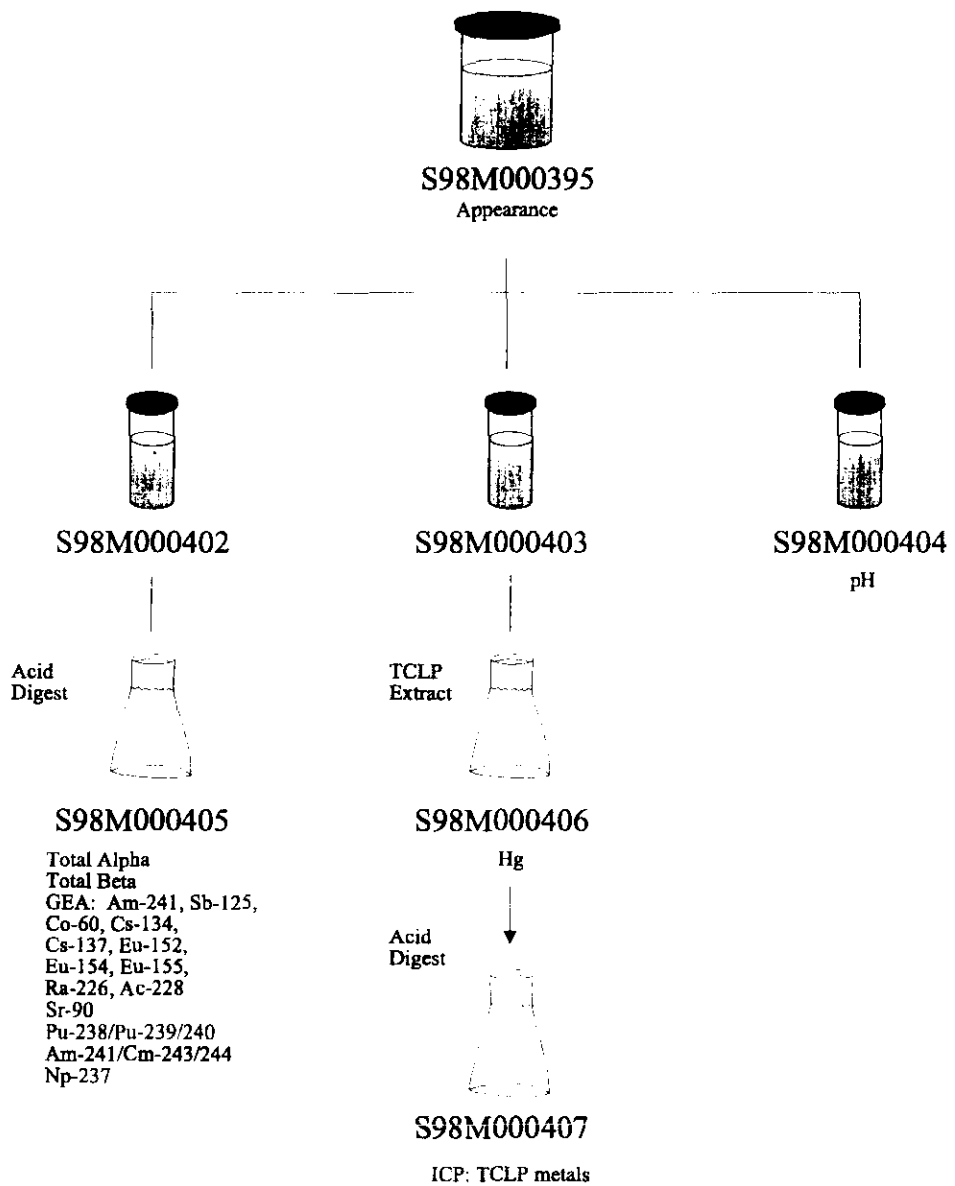
WMH 9950425

Attachment 1
Sample Breakdown Diagrams

Consisting of 3 pages,
including cover page

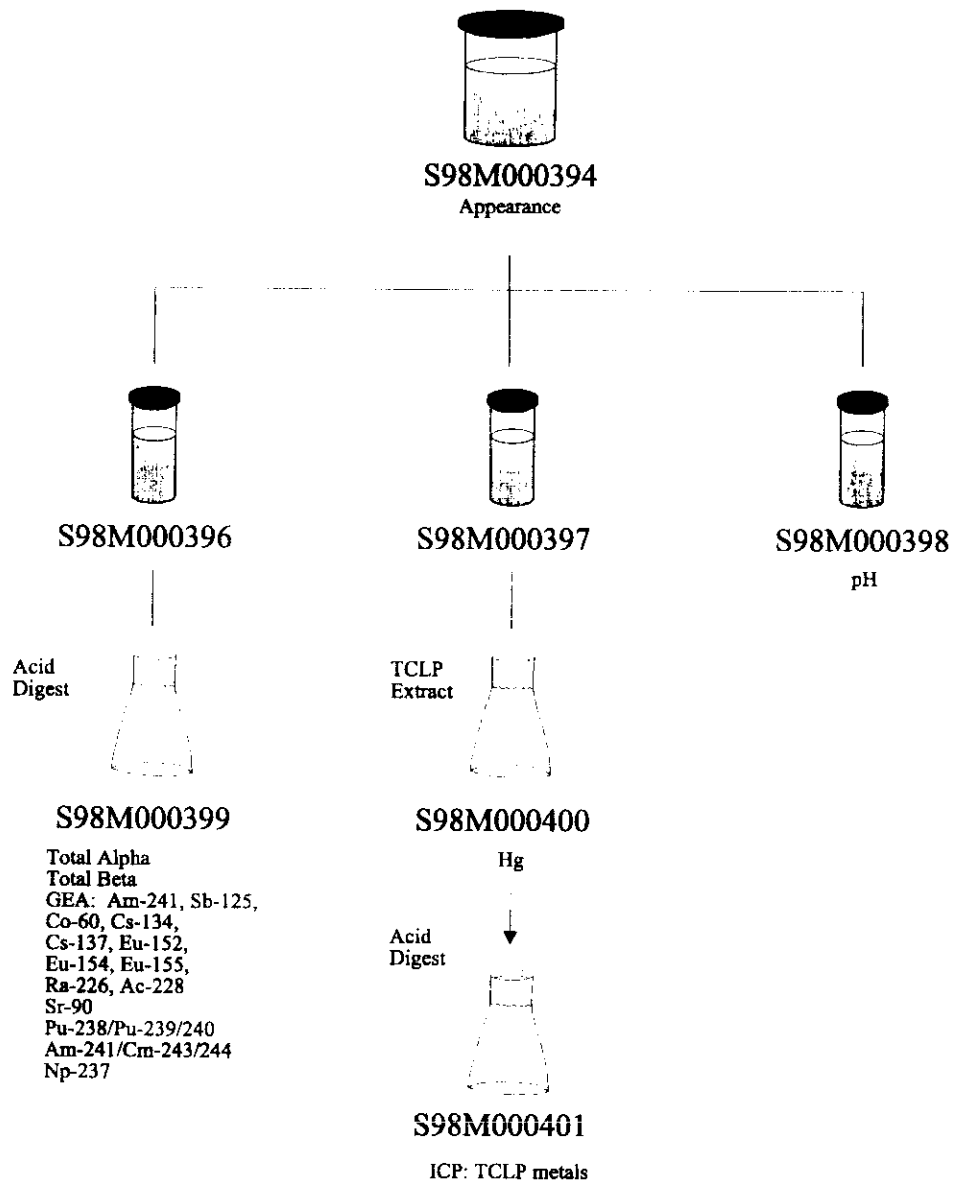
233-S Pu Concentration Facility Samples

Soil Sample
BOR5R3



233-S Pu Concentration Facility Samples

Soil Sample
BOT9W8



WMH-9950425

Attachment 2
INTERIM DATA SUMMARY REPORT

Consisting of 3 pages,
including cover page

Interim Data Summary Report
233-S

CORE NUMBER: n/a
SEGMENT #: B0R5R3

SEGMENT PORTION: Acid digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000405		A	Strontium-89/90 High Level	uCi/g	97.11	<6.98e-04	<2.94e-04	n/a	n/a	n/a	n/a	3.29e-04	2.02E+02
S98M000405		A	Pu-239/240 by TRU-SPEC Resin	uCi/g	107.1	<2.68e-02	3.200	n/a	n/a	n/a	n/a	1.72e-01	1.85E+00
S98M000405		A	Pu-238 by Ion Exchange	uCi/g	n/a	<2.68e-02	<1.72e-01	n/a	n/a	n/a	n/a	1.72e-01	1.00E+02
S98M000405		A	Np237 by TTA Extraction	uCi/g	54.98	3.00e-03	6.25e-04	n/a	n/a	n/a	n/a	1.00e-03	1.07E+02
S98M000405		A	Cobalt-60 by GEA	uCi/g	106.2	<3.29e-04	<3.72e-05	n/a	n/a	n/a	n/a	3.72e-05	n/a
S98M000405		A	Antimony-125 by GEA	uCi/g	n/a	<1.08e-03	<9.70e-05	n/a	n/a	n/a	n/a	9.70e-05	n/a
S98M000405		A	Cesium-134 by GEA	uCi/g	n/a	<3.68e-04	<3.33e-05	n/a	n/a	n/a	n/a	3.33e-05	n/a
S98M000405		A	Cesium-137 by GEA	uCi/g	99.35	<4.87e-04	<6.59e-05	n/a	n/a	n/a	n/a	6.59e-05	n/a
S98M000405		A	Europium-152 by GEA	uCi/g	n/a	<9.70e-04	<8.39e-05	n/a	n/a	n/a	n/a	8.39e-05	n/a
S98M000405		A	Europium-154 by GEA	uCi/g	n/a	<1.03e-03	<1.16e-04	n/a	n/a	n/a	n/a	1.16e-04	n/a
S98M000405		A	Europium-155 by GEA	uCi/g	n/a	<7.57e-04	<7.39e-05	n/a	n/a	n/a	n/a	7.39e-05	n/a
S98M000405		A	Radium-226 by GEA	uCi/g	n/a	<8.36e-03	<7.66e-04	n/a	n/a	n/a	n/a	1.00e-03	n/a
S98M000405		A	Actinium-228 by GEA	uCi/g	n/a	<2.22e-03	<2.16e-04	n/a	n/a	n/a	n/a	2.16e-04	n/a
S98M000405		A	Americium-241 by GEA	uCi/g	n/a	<6.27e-04	8.73e-01	n/a	n/a	n/a	n/a	n/a	0.130
S98M000405		A	Am-241 by Extraction	uCi/g	102.8	<3.87e-02	9.83e-01	n/a	n/a	n/a	n/a	1.52e-01	2.90E+00
S98M000405		A	Cm-243/244 by Extraction	uCi/g	n/a	<3.87e-02	<1.52e-01	n/a	n/a	n/a	n/a	1.52e-01	1.00E+02
S98M000405		A	Alpha of Digested Solid	uCi/g	92.72	<2.38e-04	4.050	n/a	n/a	n/a	n/a	1.93e-04	3.93E-01
S98M000405		A	Beta of Solid Sample	uCi/g	106.9	<2.19e-03	2.51e-01	n/a	n/a	n/a	n/a	1.00e-03	1.29E+00

Soil: Soil

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000404			pH on SST Samples	pH	n/a	n/a	7.500	n/a	n/a	n/a	n/a	1.00e-02	n/a

TCLP Acid digest: TCLP Acid digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000407		C	Silver -ICP-TCLP Digest-Liquid	ug/mL	86.83	2.63e-02	9.97e-02	n/a	n/a	n/a	n/a	3.70e-02	n/a
S98M000407		C	Arsenic -ICP-TCLP Digest-Liq	ug/mL	91.67	<1.00e-01	<3.75e-01	n/a	n/a	n/a	n/a	3.75e-01	n/a
S98M000407		C	Barium -ICP-TCLP Digest-Liquid	ug/mL	55.38	<5.00e-02	4.97e-01	n/a	n/a	n/a	n/a	1.88e-01	n/a
S98M000407		C	Cadmium -ICP-TCLP Digest-Liq	ug/mL	89.80	<5.00e-03	1.42e-01	n/a	n/a	n/a	n/a	1.90e-02	n/a
S98M000407		C	Chromium -ICP-TCLP Digest-Liq	ug/mL	34.59	<1.00e-02	<3.75e-02	n/a	n/a	n/a	n/a	3.70e-02	n/a
S98M000407		C	Lead -ICP-TCLP Digest-Liquid	ug/mL	72.31	<1.00e-01	<3.75e-01	n/a	n/a	n/a	n/a	3.75e-01	n/a
S98M000407		C	Selenium -ICP-TCLP Digest-Liq	ug/mL	96.09	<1.00e-01	<3.75e-01	n/a	n/a	n/a	n/a	3.75e-01	n/a

TCLP extract: TCLP extract

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000406		T	Mercury by CVAA (PE) with FIAS	ug/mL	35.00	2.00e-03	<2.84e-3	n/a	n/a	n/a	n/a	3.00e-03	n/a

Interim Data Summary Report
233-S

CORE NUMBER: n/a
SEGMENT #: BOT9W8

SEGMENT PORTION: Acid digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000399		A	Strontium-89/90 High Level	uCi/g	97.11	<6.98e-04	<4.92e-04	n/a	n/a	n/a	n/a	1.00e-03	4.93E+02
S98M000399		A	Pu-239/240 by TRU-SPEC Resin	uCi/g	107.1	<2.68e-02	1.490	n/a	n/a	n/a	n/a	8.70e-02	1.87E+00
S98M000399		A	Pu-238 by Ion Exchange	uCi/g	n/a	<2.68e-02	<8.68e-02	n/a	n/a	n/a	n/a	8.70e-02	1.00E+02
S98M000399		A	Np237 by TTA Extraction	uCi/g	54.98	3.00e-03	2.33e-03	n/a	n/a	n/a	n/a	3.00e-03	9.04E+01
S98M000399		A	Cobalt-60 by GEA	uCi/g	106.2	<3.29e-04	<1.03e-04	n/a	n/a	n/a	n/a	1.03e-04	n/a
S98M000399		A	Antimony-125 by GEA	uCi/g	n/a	<1.08e-03	<2.95e-04	n/a	n/a	n/a	n/a	2.95e-04	n/a
S98M000399		A	Cesium-134 by GEA	uCi/g	n/a	<3.68e-04	<1.01e-04	n/a	n/a	n/a	n/a	1.01e-04	n/a
S98M000399		A	Cesium-137 by GEA	uCi/g	99.35	<4.87e-04	<1.31e-04	n/a	n/a	n/a	n/a	1.31e-04	n/a
S98M000399		A	Europium-152 by GEA	uCi/g	n/a	<9.70e-04	<2.39e-04	n/a	n/a	n/a	n/a	2.39e-04	n/a
S98M000399		A	Europium-154 by GEA	uCi/g	n/a	<1.03e-03	<3.43e-04	n/a	n/a	n/a	n/a	3.43e-04	n/a
S98M000399		A	Europium-155 by GEA	uCi/g	n/a	<7.57e-04	<1.75e-04	n/a	n/a	n/a	n/a	1.75e-04	n/a
S98M000399		A	Radium-226 by GEA	uCi/g	n/a	<8.36e-03	<2.31e-03	n/a	n/a	n/a	n/a	2.00e-03	n/a
S98M000399		A	Actinium-228 by GEA	uCi/g	n/a	<2.22e-03	<6.10e-04	n/a	n/a	n/a	n/a	1.00e-03	n/a
S98M000399		A	Americium-241 by GEA	uCi/g	n/a	<6.27e-04	2.17e-01	n/a	n/a	n/a	n/a	n/a	0.450
S98M000399		A	Am-241 by Extraction	uCi/g	102.8	<3.87e-02	2.52e-01	n/a	n/a	n/a	n/a	4.00e-02	3.01E+00
S98M000399		A	Cm-243/244 by Extraction	uCi/g	n/a	<3.87e-02	<3.98e-02	n/a	n/a	n/a	n/a	4.00e-02	1.00E+02
S98M000399		A	Alpha of Digested Solid	uCi/g	92.72	<2.38e-04	1.290	n/a	n/a	n/a	n/a	1.00e-03	1.22E+00
S98M000399		A	Beta of Solid Sample	uCi/g	106.9	<2.19e-03	7.41e-02	n/a	n/a	n/a	n/a	3.00e-03	4.91E+00

SOIL: SOIL

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000398			pH on SST Samples	pH	n/a	n/a	7.830	n/a	n/a	n/a	n/a	1.00e-02	n/a

TCLP Acid digest: TCLP Acid digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000401		C	Silver -ICP-TCLP Digest-Liquid	ug/mL	86.83	2.63e-02	9.85e-02	n/a	n/a	n/a	n/a	3.70e-02	n/a
S98M000401		C	Arsenic -ICP-TCLP Digest-Liq	ug/mL	91.67	<1.00e-01	<3.75e-01	n/a	n/a	n/a	n/a	3.75e-01	n/a
S98M000401		C	Barium -ICP-TCLP Digest-Liquid	ug/mL	55.38	<5.00e-02	<1.88e-01	n/a	n/a	n/a	n/a	1.88e-01	n/a
S98M000401		C	Cadmium -ICP-TCLP Digest-Liq	ug/mL	89.80	<5.00e-03	2.36e-02	n/a	n/a	n/a	n/a	1.90e-02	n/a
S98M000401		C	Chromium -ICP-TCLP Digest-Liq	ug/mL	34.59	<1.00e-02	<3.75e-02	n/a	n/a	n/a	n/a	3.70e-02	n/a
S98M000401		C	Lead -ICP-TCLP Digest-Liquid	ug/mL	72.31	<1.00e-01	<3.75e-01	n/a	n/a	n/a	n/a	3.75e-01	n/a
S98M000401		C	Selenium -ICP-TCLP Digest-Liq	ug/mL	96.09	<1.00e-01	<3.75e-01	n/a	n/a	n/a	n/a	3.75e-01	n/a

TCLP extract: TCLP extract

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98M000400		T	Mercury by CVAA (PE) with FIAS	ug/mL	35.00	2.00e-03	<2.84e-3	n/a	n/a	n/a	n/a	3.00e-03	n/a

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Attachment 3
CHAIN-OF-CUSTODY AND REQUEST FOR SAMPLE ANALYSIS FORMS

Consisting of 3 pages, including cover page

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B98-067-04

Collector Doug Bowers	**Company Contact** Dave Encke	**Telephone No.** 373-3461	**Project Coordinator** TRENT, SJ	**Data Turnaround** 21 Days
Project Designation 233-S Plutonium Concentration Facility Process Areas - Ot	**Sampling Location** 200 west 233S bldg		**SAF No.** B98-067	
Ice Chest No.	**Field Logbook No.** EFL 1133-6		**Method of Shipment** Gov vehicle	
Shipped To TMA/BECP A	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	
Waste Designation Client determined no waste codes associated with this project.			**COA**	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation			None	None	None	None	None	None	None		
Type of Container	aG/P	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1	1	1	
Volume	250ml ~~60mL~~	60mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	~~60mL~~	12-01-98

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Strontium-89,90 – Total Sr	Americium-241/Curium-244	Americium-241; Isotopic Plutonium	Gross Alpha; Gross Beta	Metals by ICP (TCLP) - 131/6010A; Mercury (TCLP) - 131/7470	Neptunium-237	pH (Soil) - 9045	See item (1) in Special Instructions.	
B0R5R3	Other Solid	10-26-98	1630	X	X	X	X	X	X	X	X	X	
B0T9W8	other solid	10-6-98	1300	X	X	X	X	X	X	X	X	X	

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-2-98/1022	Tom McGinnis	12/2/98 1030

SPECIAL INSTRUCTIONS

** If limited sample volume is available, contact Sample Management for analyses priority.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

B0R5R3 in 250ml aG
B0T9W8 in 250ml poly
both samples got full analyte list, see RSA

Matrix *

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

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

REQUEST FOR SAMPLE ANALYSIS (RSA)

Group ID No. (For lab use only): 98000652

1. Sample Origin	2. Date Sampled	4. Requestor's Name	6. TPCN	7. Org. Code
233-5	10-26-98 10-6-98	Doug Bowers	SEE LOI DB 9098	CHE 8374

Customer/Project Code	3. Submitted By	5. Requestor's Phone/MSIN/FAX
233-5	Doug Bowers	372-9600/H9-03/372-9487

8. Customer ID No.	9. Laboratory Sample No.	10. Volume of Sample	11. Matrix of Sample	12. Requested Analyses	13. Expected Range
BOT9W8	598M000394	2039	Soil	Sr 89,90: Total Sr, Americium-241/Curium-244, Americium-241; Isotopic Pu, Gross Alpha/Beta, Metals by ICP (TCLP)-1311/6010A; Mercury (TCLP)-1311/7470, Neptunium-237, pH (soil)-9045, Gamma Spec. (Cesium-137, Cobalt-60, Europium-152,154,155)	
BOR5R3	598M000395	2609	Soil		
				Pu content = 15mg/200g of sample	

14. Does sample have a MSDS?

☐ Yes: HEHF assigned MSDS No. _____

☑ No: Description of process that produced waste/sample:

15. Is this sample RCRA listed? ☐ Yes ☑ No

Applicable Listed Waste Codes:

☐ Yes ☑ No P Codes: (list) _____

☐ Yes ☑ No U Codes: (list) _____

☐ Yes ☑ No K Codes: (list) _____

☐ Yes ☑ No F Codes: (list) _____

Applicable Characteristic Codes:

☐ Yes ☑ No D001: (how determined) _____ Ignitable

☐ Yes ☑ No D002: (how determined) _____ Corrosive

☐ Yes ☑ No D003: (how determined) _____ Reactive

☐ Yes ☑ No Toxic: (list codes) _____

PCB: Does this waste/sample contain PCBs?

☐ Yes Over 500 ppm

☐ Yes Over 50 ppm

☐ Yes PCBs are suspected

☑ No PCBs are suspected

If YES, what is the source of the PCBs?

☐ Transformer, capacitor, or ballast

☐ Other, specify _____

☐ Unknown

16. Sample Disposition

☑ Return to Customer

☐ Samples found to contain PCBs will be returned to the customer

☐ Dispose of per facility procedures with applied charges for analyses and disposal

Sample(s) Dose Rate at Contact: <0.5 mrem/hr @ C

HPT Signature: [signature]

17. QC Required ☐ Per 222-S Laboratory Quality Assurance Plan (HNF-SD-CP-QAPP-016)

☑ Other (list reference document or attach) See LOI

18. Special Instructions (Special Storage Requirements, Reporting format, holding times, etc.)

Fax copy to ~~[illegible]~~ 372-9487

Doris Ayres

18. Requested Turnaround Time

☐ 2 Weeks ☐ 4 Weeks

☐ Other See LOI (45 & 60 days)

20. Sample Received By: [signature] Date 12/2/98 Time 1030

21. Chain of Custody

☐ No ☑ Yes

Number: B98-067-04

A-6002-365 (05/97)