B06NDO-TMA-274
0045252

TMA

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

28 29 30
DEC 1992
RECEIVED
OSM DMO

METALS
Case No. N2-09-088
(TMA/Skinner & Sherman W.O. # S2-09-390)

December 22, 1992

TMA Master Work Order N2-09-088

SEP 1996
RECEIVED
EDMC

TMA
Thermo Analytical Inc.

Skinner & Sherman Labs., Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200
FAX (617) 890-3883

December 21, 1992

TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

Quality Control Narrative

Scope
Ten (10) biota samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on September 22, 1992 from TMA/NORCAL. The samples were analyzed for the USEPA CLP metals. The analysis were performed under TMA/Skinner and Sherman work order S209390.

Methodology
The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02.

Discussion
All quality control requirements were met for the samples with the following exceptions:

The antimony, arsenic, manganese, and selenium digestion spike recovery exceeded the control limit requirements.

The aluminum, calcium, copper, iron, and lead laboratory duplicates exceeded the control limit requirements.

Please feel free to call if there are any questions concerning this package.

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

David N. Peterson
Assistant Laboratory Manager

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND0

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-01S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2000		*	P
7440-36-0	Antimony	3.6	U	N	P
7440-38-2	Arsenic	2.9	U	EN	F
7440-39-3	Barium	53.1			P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.73	B		P
7440-70-2	Calcium	87300		*	P
7440-47-3	Chromium	6.5			P
7440-48-4	Cobalt	1.8	B		P
7440-50-8	Copper	15.2		*	P
7439-89-6	Iron	5450		*	P
7439-92-1	Lead	11.5		*	F
7439-95-4	Magnesium	4660			P
7439-96-5	Manganese	194		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	2890			P
7782-49-2	Selenium	3.7	U	EN	F
7440-22-4	Silver	0.53	U		P
7440-23-5	Sodium	697	B		P
7440-28-0	Thallium	0.80	B		F
7440-62-2	Vanadium	10.2	B		P
7440-66-6	Zinc	240			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture:

Color After: GREY Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND1

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-02S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1020		*	P
7440-36-0	Antimony	3.3	U	N	P
7440-38-2	Arsenic	2.9	U	WN	F
7440-39-3	Barium	27.4	B		P
7440-41-7	Beryllium	0.09	B		P
7440-43-9	Cadmium	0.20	U		P
7440-70-2	Calcium	12000		*	P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	14.3		*	P
7439-89-6	Iron	4630		*	P
7439-92-1	Lead	1.6		*	F
7439-95-4	Magnesium	4100			P
7439-96-5	Manganese	88.1		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	4.0	B		P
7440-09-7	Potassium	8350			P
7782-49-2	Selenium	3.8	U	WN	F
7440-22-4	Silver	0.49	U		P
7440-23-5	Sodium	2070			P
7440-28-0	Thallium	0.26	U		F
7440-62-2	Vanadium	5.4	B		P
7440-66-6	Zinc	44.5			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture:

Color After: BLACK Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND2

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-03S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 95.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3970		*	P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	2.9	U	EN	F
7440-39-3	Barium	69.8			P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.20	U		P
7440-70-2	Calcium	37800		*	P
7440-47-3	Chromium	5.4			P
7440-48-4	Cobalt	4.7	B		P
7440-50-8	Copper	11.3		*	P
7439-89-6	Iron	11300		*	P
7439-92-1	Lead	2.3		*	F
7439-95-4	Magnesium	4020			P
7439-96-5	Manganese	206		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	1670			P
7782-49-2	Selenium	3.8	U	EN	F
7440-22-4	Silver	0.51	U		P
7440-23-5	Sodium	462	B		P
7440-28-0	Thallium	0.26	U		F
7440-62-2	Vanadium	22.4			P
7440-66-6	Zinc	117			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND3

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-04S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1550		*	P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	2.9	U	EN	F
7440-39-3	Barium	45.1			P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.21	U		P
7440-70-2	Calcium	93200		*	P
7440-47-3	Chromium	3.4			P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	20.5		*	P
7439-89-6	Iron	3510		*	P
7439-92-1	Lead	2.4		*	F
7439-95-4	Magnesium	2400			P
7439-96-5	Manganese	93.0		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	1540			P
7782-49-2	Selenium	3.7	U	WN	F
7440-22-4	Silver	0.52	U		P
7440-23-5	Sodium	1390			P
7440-28-0	Thallium	0.26	U		F
7440-62-2	Vanadium	7.8	B		P
7440-66-6	Zinc	267			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06ND4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-05S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2480		*	P
7440-36-0	Antimony	3.4	U	N	P
7440-38-2	Arsenic	3.0	U	WN	F
7440-39-3	Barium	55.5			P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.20	U		P
7440-70-2	Calcium	73300		*	P
7440-47-3	Chromium	4.5			P
7440-48-4	Cobalt	2.7	B		P
7440-50-8	Copper	18.1		*	P
7439-89-6	Iron	5090		*	P
7439-92-1	Lead	2.9		*	F
7439-95-4	Magnesium	4430			P
7439-96-5	Manganese	116		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.6	B		P
7440-09-7	Potassium	2570			P
7782-49-2	Selenium	3.9	U	EN	F
7440-22-4	Silver	0.51	U		P
7440-23-5	Sodium	6500			P
7440-28-0	Thallium	0.27	U		F
7440-62-2	Vanadium	10.3			P
7440-66-6	Zinc	204			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-06S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 97.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3040		*	P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	3.0	U	N	F
7440-39-3	Barium	38.5	B		P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.21	U		P
7440-70-2	Calcium	46000		*	P
7440-47-3	Chromium	5.3			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	13.1		*	P
7439-89-6	Iron	6110		*	P
7439-92-1	Lead	3.7		*	F
7439-95-4	Magnesium	3330			P
7439-96-5	Manganese	109		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	811	B		P
7782-49-2	Selenium	3.9	U	WN	F
7440-22-4	Silver	0.51	U		P
7440-23-5	Sodium	674	B		P
7440-28-0	Thallium	0.27	U		F
7440-62-2	Vanadium	11.4			P
7440-66-6	Zinc	70.6			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-07S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 95.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2530		*	P
7440-36-0	Antimony	3.3	U	N	P
7440-38-2	Arsenic	2.8	U	WN	F
7440-39-3	Barium	82.7			P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.20	U		P
7440-70-2	Calcium	72300		*	P
7440-47-3	Chromium	3.5			P
7440-48-4	Cobalt	1.6	B		P
7440-50-8	Copper	21.2		*	P
7439-89-6	Iron	4300		*	P
7439-92-1	Lead	3.8		*	F
7439-95-4	Magnesium	4260			P
7439-96-5	Manganese	123		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	6900			P
7782-49-2	Selenium	3.7	U	WN	F
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	1640			P
7440-28-0	Thallium	0.25	U		F
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	174			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND7

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-08S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	760		*	P
7440-36-0	Antimony	3.6	U	N	P
7440-38-2	Arsenic	3.0	U	EN	F
7440-39-3	Barium	53.5			P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.58	B		P
7440-70-2	Calcium	162000		*	P
7440-47-3	Chromium	4.0			P
7440-48-4	Cobalt	0.57	U		P
7440-50-8	Copper	12.0		*	P
7439-89-6	Iron	1660		*	P
7439-92-1	Lead	13.9		*	F
7439-95-4	Magnesium	4360			P
7439-96-5	Manganese	152		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	B		P
7440-09-7	Potassium	2600			P
7782-49-2	Selenium	4.0	U	EN	F
7440-22-4	Silver	0.53	U		P
7440-23-5	Sodium	4370			P
7440-28-0	Thallium	0.27	U		F
7440-62-2	Vanadium	3.6	B		P
7440-66-6	Zinc	294			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-09S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 93.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	905		*	P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	2.9	U	WN	F
7440-39-3	Barium	22.0	B		P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.36	B		P
7440-70-2	Calcium	35800		*	P
7440-47-3	Chromium	2.8			P
7440-48-4	Cobalt	0.81	B		P
7440-50-8	Copper	12.5		*	P
7439-89-6	Iron	2420		*	P
7439-92-1	Lead	5.6		*	F
7439-95-4	Magnesium	1500			P
7439-96-5	Manganese	60.3		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	1790			P
7782-49-2	Selenium	3.8	U	WN	F
7440-22-4	Silver	0.52	U		P
7440-23-5	Sodium	743	B		P
7440-28-0	Thallium	0.26	U		F
7440-62-2	Vanadium	4.2	B		P
7440-66-6	Zinc	282			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06NF0

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-10S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 92.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1960		*	P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	3.1	U	EN	F
7440-39-3	Barium	41.3	B		P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.21	U		P
7440-70-2	Calcium	111000		*	P
7440-47-3	Chromium	5.0			P
7440-48-4	Cobalt	1.7	B		P
7440-50-8	Copper	17.5		*	P
7439-89-6	Iron	4800		*	P
7439-92-1	Lead	5.7		*	F
7439-95-4	Magnesium	5860			P
7439-96-5	Manganese	82.6		N	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	967	B		P
7782-49-2	Selenium	4.0	U	EN	F
7440-22-4	Silver	0.52	U		P
7440-23-5	Sodium	798	B		P
7440-28-0	Thallium	0.27	U		F
7440-62-2	Vanadium	8.3	B		P
7440-66-6	Zinc	295			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S209390 CLIENT Hanford NOR No. SAMPLES:

PROTCL CLP TURNARND 33 Days (Soil) (Water) 10 Bottle (Specify Other

COOLER TEMP: 5 oC, or NA

CUSTODIAN B. Pagan SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N209088

SHIPER & # Fed Ex PO/CONTRACT# ↓

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. Sanchez

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

SAMPLE LABELS AGREE WITH CHAIN OF CUSTODY INFO? YES/NO (COMMENT)

CLIENT PAPERWORK AGREES WITH SAMPLES & COC? YES /NO (COMMENT)

SHIPMENT DATES 9.22.92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME U
1	B06ND0	Solid	9.22.92	N/A	As, IC20.S, Pb, Se, SOW788, TC	
2	B06ND1	↓	↓	↓	↓	
3	B06ND2					
4	B06ND3					
5	B06ND4					
6	B06ND5					
7	B06ND6					
8	B06ND7					
9	B06ND8					
10	B06NF0				D.S.	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE:

REVIEWED

Compute 9/24/92

* EPA/CLP required Rev 1.6 PAGE: 000008 BP

PAGE 1 TMA/Norcal CHAIN OF CUSTODY ORD # N2-09-088

RCVD: 09/14/92 DUE: 10/14/92 09/19/92 09:40:30 KEEP: 01/12/93 DISP: S

100 Area Biota

DASH	SAMPLE IDENTIFICATION	STORED	TESTS	
01A-B	B06ND0	SS_1	WH001	WH002
02A-B	B06ND1	SS_1	WH001	WH002
03A	B06ND2	SS_1	WH001	WH002
04A	B06ND3	SS_1	WH001	WH002
05A	B06ND4	SS_1	WH001	WH002
06A	B06ND5	SS_1	WH001	WH002
07A	B06ND6	SS_1	WH001	WH002
08A	B06ND7	SS_1	WH001	WH002
09A	B06ND8	SS_1	WH001	WH002
10A	B06NF0	SS_1	WH001	WH002
10B	~~B06NF0 [illegible]~~	SS_1	WH001	WH002
10C	~~B06NF0 [illegible]~~	SS_1	WH001	WH002
10D	~~[illegible]~~	SS_1	WH001	WH002

RELINQUISHED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
Kermit Bhum	9-21-92	S&S		[illegible]	9/22/92

p 2-09-88 ¿ 59

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator C.E. Heiden

Company Contact Dan Landeen Telephone 376-1038

Project Designation/Sampling Locations 100 Area Biota Sampling Collection Date 9/2 & 9/3/92

Ice Chest No. RM # 105 Field Logbook No. WHC-N-444

Bill of Lading/Airbill No. 2521567521 Offsite Property No. W92-0-0622 #23

Method of Shipment Emery

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks N/A

Sample Identification

B06ND0 - Coyote Scat
B06ND1 - Coyote Scat
B06ND2 - Coyote Scat
B06ND3 - Raptor Pellets
B06ND4 - Coyote Scat
B06ND5 - Raptor Pellets
B06ND6 - Coyote Scat
B06ND7 - Coyote Scat
B06ND8 - Raptor Pellets
B06NF0 - Coyote Scat

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)		
Relinquished by: C.E. Heiden C.E. Heiden	Received by: Kermit Blum	Date/Time: 9-14-92 0800 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 9-12-92; opened 9-14-92 - KB

17

A-6000-407 (12/90)

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P. O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 Fax No. (510) 235-0438

NOV 1992
RECEIVED
OSM DMO

November 12, 1992

SENT BY FEDERAL EXPRESS

Ref. TMA/Norcal N2-09-098-7082

Mr. John Bourgeault
Westinghouse Hanford Company
2355 Stevens Drive
Richland, WA 99352

Dear Mr. Bourgeault:

Enclosed on the Summary Data Section, are the ^{90}Sr and gamma scan results for the coyote scat samples from 100 Area Biota Sampling Location, we received 14 September 1992. The QA/QC results are also given in the Summary Data Section.

The Summary Data Section is paginated 1 through 39 and Appendices 1 through 17 are paginated 40 through 206.

Please call if you have any questions concerning this data.

Sincerely,

D. P. Kharkar

Dinkar P. Kharkar, Ph.D.
Manager, Nuclear Programs

DPK/ss

Enclosures: Section 1 and 2
Appendices

N209098-01

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND0

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-01	Client sample id	B06ND0
Dept sample id	7082-001	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.39	1.3	1.2	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	7.7	7.0				GAM
Iron 59		U		1.6	0.050	U	GAM
Chromium 51	14392-02-0	U		12		U	GAM
Cobalt 60	10198-40-0	U		0.89	0.050	U	GAM
Zinc 65	17982-39-3	U		1.1		U	GAM
Ruthenium 106	13967-48-1	U		4.7		U	GAM
Cesium 134	17967-70-9	U		0.58		U	GAM
Cesium 137	10045-97-3	U		0.66	0.050	U	GAM
Europium 152	14683-23-9	U		0.96	0.10	U	GAM
Europium 154	15585-10-1	U		0.67	0.10	U	GAM
Radium 226	13982-67-7	0.98	0.83		0.10		GAM
Thorium 228	14274-82-9	0.67	0.63				GAM
Thorium 232	7440-29-1	U		2.7		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-02

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND1

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-02	Client sample id	B06ND1
Dept sample id	7082-002	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.50	0.73	1.6	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.5	3.9				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		7.6		U	GAM
Cobalt 60	10198-40-0	U		0.35	0.050	U	GAM
Zinc 65	17982-39-3	U		0.88		U	GAM
Ruthenium 106	13967-48-1	U		3.2		U	GAM
Cesium 134	17967-70-9	U		0.29		U	GAM
Cesium 137	10045-97-3	U		0.41	0.050	U	GAM
Europium 152	14683-23-9	U		0.60	0.10	U	GAM
Europium 154	15585-10-1	U		0.39	0.10	U	GAM
Radium 226	13982-67-7	U		0.76	0.10	U	GAM
Thorium 228	14274-82-9	0.47	0.42				GAM
Thorium 232	7440-29-1	U		1.9		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-03

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND2

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-03	Client sample id	B06ND2
Dept sample id	7082-003	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.21	1.7	0.83	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	8.5	7.4				GAM
Iron 59		U		2.3	0.050	U	GAM
Chromium 51	14392-02-0	U		12		U	GAM
Cobalt 60	10198-40-0	U		0.51	0.050	U	GAM
Zinc 65	17982-39-3	U		1.3		U	GAM
Ruthenium 106	13967-48-1	U		4.6		U	GAM
Cesium 134	17967-70-9	U		0.54		U	GAM
Cesium 137	10045-97-3	U		0.64	0.050	U	GAM
Europium 152	14683-23-9	U		0.83	0.10	U	GAM
Europium 154	15585-10-1	U		0.54	0.10	U	GAM
Radium 226	13982-67-7	0.76	0.51		0.10		GAM
Thorium 228	14274-82-9	1.2	0.74				GAM
Thorium 232	7440-29-1	U		2.7		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-04

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND3

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-04	Client sample id	B06ND3
Dept sample id	7082-004	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.74	0.36	0.92	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		27		U	GAM
Iron 59		U		7.8	0.050	U	GAM
Chromium 51	14392-02-0	U		28		U	GAM
Cobalt 60	10198-40-0	U		1.3	0.050	U	GAM
Zinc 65	17982-39-3	U		3.1		U	GAM
Ruthenium 106	13967-48-1	U		14		U	GAM
Cesium 134	17967-70-9	U		1.7		U	GAM
Cesium 137	10045-97-3	U		1.3	0.050	U	GAM
Europium 152	14683-23-9	U		1.9	0.10	U	GAM
Europium 154	15585-10-1	U		1.4	0.10	U	GAM
Radium 226	13982-67-7	U		3.1	0.10	U	GAM
Thorium 228	14274-82-9	U		1.8		U	GAM
Thorium 232	7440-29-1	U		6.2		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-05

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND4

SDG 7082
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N209098-05
Dept sample id 7082-005
Received 09/14/92
% moisture

Client sample id B06ND4
Matrix BIOTA
Collected 09/02/92
Chain of custody id WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.11	0.28	0.91	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.7	3.6				GAM
Iron 59		U		1.3	0.050	U	GAM
Chromium 51	14392-02-0	U		7.7		U	GAM
Cobalt 60	10198-40-0	U		0.45	0.050	U	GAM
Zinc 65	17982-39-3	U		0.89		U	GAM
Ruthenium 106	13967-48-1	U		2.9		U	GAM
Cesium 134	17967-70-9	U		0.40		U	GAM
Cesium 137	10045-97-3	U		0.33	0.050	U	GAM
Europium 152	14683-23-9	U		0.56	0.10	U	GAM
Europium 154	15585-10-1	U		0.36	0.10	U	GAM
Radium 226	13982-67-7	0.71	0.47		0.10		GAM
Thorium 228	14274-82-9	U		0.76		U	GAM
Thorium 232	7440-29-1	U		1.5		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.20
Report date 11/13/92

N209098-06

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND5

SDG 7082
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N209098-06
Dept sample id 7082-006
Received 09/14/92
% moisture

Client sample id B06ND5
Matrix BIOTA
Collected 09/02/92
Chain of custody id WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	1.1	0.92	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		87		U	GAM
Iron 59		U		31	0.050	U	GAM
Chromium 51	14392-02-0	U		150		U	GAM
Cobalt 60	10198-40-0	U		13	0.050	U	GAM
Zinc 65	17982-39-3	U		17		U	GAM
Ruthenium 106	13967-48-1	U		72		U	GAM
Cesium 134	17967-70-9	U		8.0		U	GAM
Cesium 137	10045-97-3	U		6.5	0.050	U	GAM
Europium 152	14683-23-9	U		13	0.10	U	GAM
Europium 154	15585-10-1	U		8.2	0.10	U	GAM
Radium 226	13982-67-7	U		16	0.10	U	GAM
Thorium 228	14274-82-9	U		9.7		U	GAM
Thorium 232	7440-29-1	U		31		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.20
Report date 11/13/92

N209098-07

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND6

SDG 7082
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N209098-07
Dept sample id 7082-007
Received 09/14/92
% moisture

Client sample id B06ND6
Matrix BIOTA
Collected 09/02/92
Chain of custody id WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.006	0.27	0.98	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		16		U	GAM
Iron 59		U		3.6	0.050	U	GAM
Chromium 51	14392-02-0	U		19		U	GAM
Cobalt 60	10198-40-0	U		1.0	0.050	U	GAM
Zinc 65	17982-39-3	U		2.5		U	GAM
Ruthenium 106	13967-48-1	U		9.6		U	GAM
Cesium 134	17967-70-9	U		0.97		U	GAM
Cesium 137	10045-97-3	U		1.1	0.050	U	GAM
Europium 152	14683-23-9	U		1.4	0.10	U	GAM
Europium 154	15585-10-1	U		0.84	0.10	U	GAM
Radium 226	13982-67-7	1.3	1.3		0.10		GAM
Thorium 228	14274-82-9	U		1.3		U	GAM
Thorium 232	7440-29-1	U		3.9		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.20
Report date 11/13/92

N209098-08

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND7

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-08	Client sample id	B06ND7
Dept sample id	7082-008	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.073	1.9	1.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.6	4.2				GAM
Iron 59		U		1.8	0.050	U	GAM
Chromium 51	14392-02-0	U		6.2		U	GAM
Cobalt 60	10198-40-0	U		0.51	0.050	U	GAM
Zinc 65	17982-39-3	U		0.80		U	GAM
Ruthenium 106	13967-48-1	U		2.8		U	GAM
Cesium 134	17967-70-9	U		0.37		U	GAM
Cesium 137	10045-97-3	0.44	0.38		0.050		GAM
Europium 152	14683-23-9	U		0.64	0.10	U	GAM
Europium 154	15585-10-1	U		0.40	0.10	U	GAM
Radium 226	13982-67-7	U		0.77	0.10	U	GAM
Thorium 228	14274-82-9	U		0.60		U	GAM
Thorium 232	7440-29-1	U		1.5		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-09

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND8

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-09	Client sample id	B06ND8
Dept sample id	7082-009	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.15	0.24	0.97	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	10	5.3				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		9.2		U	GAM
Cobalt 60	10198-40-0	U		0.43	0.050	U	GAM
Zinc 65	17982-39-3	U		1.0		U	GAM
Ruthenium 106	13967-48-1	U		3.8		U	GAM
Cesium 134	17967-70-9	U		0.42		U	GAM
Cesium 137	10045-97-3	U		0.45	0.050	U	GAM
Europium 152	14683-23-9	U		0.70	0.10	U	GAM
Europium 154	15585-10-1	U		0.45	0.10	U	GAM
Radium 226	13982-67-7	U		0.74	0.10	U	GAM
Thorium 228	14274-82-9	0.66	0.52				GAM
Thorium 232	7440-29-1	U		1.6		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-10

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06NF0

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-10	Client sample id	B06NF0
Dept sample id	7082-010	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	4.5	0.60	1.1	2.0		Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		34		U	GAM
Iron 59		U		8.0	0.050	U	GAM
Chromium 51	14392-02-0	U		34		U	GAM
Cobalt 60	10198-40-0	U		2.4	0.050	U	GAM
Zinc 65	17982-39-3	U		4.6		U	GAM
Ruthenium 106	13967-48-1	U		18		U	GAM
Cesium 134	17967-70-9	U		2.4		U	GAM
Cesium 137	10045-97-3	U		2.0	0.050	U	GAM
Europium 152	14683-23-9	U		3.4	0.10	U	GAM
Europium 154	15585-10-1	U		2.2	0.10	U	GAM
Radium 226	13982-67-7	U		3.7	0.10	U	GAM
Thorium 228	14274-82-9	U		2.2		U	GAM
Thorium 232	7440-29-1	U		8.2		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

SDG 7082	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of coyote scat samples from 100 Area Biota Sampling Location (TMA/Norcal Group 7082) are reported herein. TMA/Norcal Group 7082 is comprised of the ten samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 10.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. WHC-N-444.

1.2 SAMPLE VOLUME

Ziplock bags with the samples were received for the analyses.

1.3 MISSING SAMPLES

All samples were accounted for in an undamaged condition.

1.4 HOLDING TIMES

The collections were made between 9/2/92 and 9/3/92 and the sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control, a blank, and a replicate. All original analyses were performed with QC samples 7082-11 through 14.

The QC samples were prepared and labelled by the quality control officer. Copies of The QC notebook pages are included in the data package.

2.1 LABORATORY CONTROL SAMPLES

LCS recoveries for all nuclides were good. The MDA's for ^{90}Sr and gamma nuclides meet the RDL requirements. Only ^{60}Co and ^{137}Cs were added in the laboratory control sample. The MDA's of ^{59}Fe and europium were underlined because they were higher than the RDL. The MDA was based on a nominal aliquot of 750 g.

2.2 BLANKS

MDA's for ^{90}Sr meet the RDL requirements. The MDA's for gamma nuclides were underlined because they were than the RDL. Blank MDA's were calculated on the basis of a nominal aliquot of 750 g.

SDG 7082 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

The results were satisfactory for the replicate analysis. The MDA's for ^{59}Fe, ^{60}Co, ^{137}Cs, europium isotopes were underlined because they were higher than RDL. Only small aliquots (0.7 - 42 gm) were available for analysis, instead of 750 g required by MDA calculations.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for thirteen analysis was 70 ± 17%). The lowest yield was 48% and the highest was 79%. The average MDA was 1.0 ± 0.41 pCi/g. Positive ^{90}Sr concentration was not found in any of the samples except in 7082-10.

3.3 Gamma Scan Analyses: Gamma scan analysis did not find gamma nuclides in any of the samples except in 7082-8 which had 0.44 pCi/g. Again, MDA's for gamma nuclides were higher due to small aliquots available for gamma analysis.

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator C.E. Heiden

Company Contact Dan Landeen Telephone 376-1038

Project Designation/Sampling Locations 100 Area Biota Sampling Collection Date 9/2 & 9/3/92

Ice Chest No. RM # 105 Field Logbook No. WHC-N-444

Bill of Lading/Airbill No. 252156752 1 Offsite Property No. W92-0-0622 #23

Method of Shipment Emery

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks N/A

Sample Identification

B06ND0 - Coyote Scat
B06ND1 - Coyote Scat
B06ND2 - Coyote Scat
B06ND3 - Raptor Pellets
B06ND4 - Coyote Scat
B06ND5 - Raptor Pellets
B06ND6 - Coyote Scat
B06ND7 - Coyote Scat
B06ND8 - Raptor Pellets
B06NF0 - Coyote Scat

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)		
Relinquished by: C.E. Heiden C.E. Heiden	Received by: Kermit Blum	Date/Time: 9-14-92 0800 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: UK 8-11-93
Relinquished by:	Received by:	Date/Time: ~~DTO~~

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/Norcal 9-12-92 ; opened 9-14-92 - KB

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector C.E. Heiden Date Sampled _____ Time _____ hours

Company Contact Dan Landeen. Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06ND0	Ziplock Bag	Coyote Scat	TAL Metals (Omit Mercury) CLP
B06ND1		Coyote Scat	Total Gamma, Sr-90 LAB SOP
B06ND2		Coyote Scat	
B06ND3		Raptor Pellets	
B06ND4		Coyote Scat	
B06ND5		Raptor Pellets	
B06ND6		Coyote Scat	
B06ND7		Coyote Scat	
B06ND8		Raptor Pellets	TAL Metals (Omit Mercury) CLP
B06NF0	Ziplock Bag	Coyote Scat	Total Gamma, Sr-90 LAB SOP

Field Information** —

Special Handling and/or Storage —

Possible Sample Hazards — CK 8-11-93

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 9-14-92

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90)

7082

PAGE 1 TMA/Norcal CHAIN OF CUSTODY ORD # N2-09-098

RCVD: 09/14/92 DUE: 09/21/92 09/18/92 10:45:06 KEEP: 12/20/92 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	B06ND0	SCA2(1)	HOLD
02A	B06ND1	SCA2(1)	HOLD
03A	B06ND2	SCA2(1)	HOLD
04A	B06ND3	SCA2(1)	HOLD
05A	B06ND4	SCA2(1)	HOLD
06A	B06ND5	SCA2(1)	HOLD
07A	B06ND6	SCA2(1)	HOLD
08A	B06ND7	SCA2(1)	HOLD
09A	B06ND8	SCA2(1)	HOLD
10A	B06NF0	SCA2(1)	HOLD

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
[illegible]		Mod. 4	09/18	[illegible]	09/18
T Cary	12/7/92	SCA 2		Al	12/7/92

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Validation Narrative - SDG: B06ND0

1. INTRODUCTION

This report presents the results of inorganic data validation on the following sample delivery group and sample numbers which were analyzed by the Thermo Analytical, Inc. - Richmond, CA laboratory. The HEIS sample numbers associated with this group by SDG are listed below:

Data Package ID	HEIS Sample Numbers		Matrix
SDG: B06N95	B06ND0	B06ND5	Soil
	B06ND1	B06ND6	Soil
	B06ND2	B06ND7	Soil
	B06ND3	B06ND8	Soil
	B06ND4	B06NF0	Soil

Sample identifications, dates received, and analyte concentrations are provided in the enclosed analysis data sheets. Data validation was conducted in accordance with the Westinghouse Hanford Company statement of work (WHC 1991) and validation procedures (WHC 1992). The data validation procedure is a review of laboratory performance and implementation of applicable protocols. Subsequent technical data evaluation by project lead personnel should include a determination of the appropriateness of results from a standpoint of past history and present knowledge of the sample site.

2. DATA QUALITY OBJECTIVES

Completeness

The data package was complete for all requested analyses and met the data quality objectives of the work plan. Data quality objectives for the project specified the use of CLP methods for the TAL metals analytes.

Data Qualification

The data is acceptable and useable given the attached qualifiers.

3. QUALIFIED DATA

This section presents a summary of the qualifications required based on validation of the subject data package (See Data Qualification Summary - Form B - 8).

3.1 Major Deficiencies

No major deficiencies were noted in the data.

3.2 Minor Deficiencies

The following qualifications were required as a result of the validation.

- Aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, copper, iron, magnesium, potassium, silver, sodium and zinc were detected in the laboratory and/or preparation blanks above their IDLs. Contaminants were detected in various samples at concentrations less than five times the highest concentrations found in the blanks and these have been qualified as non-detects (U).

- Matrix spike recoveries for antimony, arsenic, manganese and selenium exceeded control limits. Qualify results as estimated unless percent recoveries were < 30%, then qualify as rejected.

- Duplicates for aluminum, calcium, and iron were outside control limits. All samples > IDL were qualified as estimated (J).

- Analytical spike recoveries for arsenic and selenium were outside control limits, therefore the results have been qualified as estimated (UJ for non-detects).

- ICP interference check indicated that sample results for potassium and sodium should be qualified as estimated (J).

4. CONCLUSION

The results contained in this report are acceptable for use.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 100A BIOTA	REVIEWER: RCJ	DATE: 1/25/93
LABORATORY: TMA	CASE: N2-09-088	SDG: B06ND0
SAMPLES/MATRIX: B06ND0, B06ND1, B06ND2, B06ND3, B06ND4, B06ND5, B06ND6, B06ND7, B06ND8, B06NF0		
ALL SOIL COYOTE SCAT AND		
RAPTOR PELLETS		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page	✓		
Traffic Reports	✓		
Sample Data			
Inorganic Analysis Data Sheets	✓		
Standards Data			
Initial and Continuing Calibration Verification	✓		
CRDL Standard for AA and ICP	✓		
QC Summary			
Blanks	✓		
ICP Interference Check Summary	✓		
Spike Sample Recovery	✓		
Post-Digestion Spike Sample Recovery	✓		
Duplicate	✓		
Laboratory Control Sample	✓		
Standard Addition Results	✓		
ICP Serial Dilutions	✓		
Instrument Detection Limits	✓		
ICP Interelement Correction Factors	✓		
ICP Linear Ranges	✓		
Preparation Log	✓		
Analysis Run Log	✓		
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data			✓
Cyanide Raw Data			✓
Additional Data			
Internal laboratory chain-of-custody	✓		
Laboratory Sample Preparation Records	✓		

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	✓		
Reduction Formulae			✓
Instrument Run Logs	✓		
Chemist Notebook Pages			✓

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? Yes No (N/A)

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

* SODIUM & POTASSIUM COULD BE POTENTIAL FALSE POSITIVES. QUALIFY ALL POSITIVE SAMPLE RESULTS FOR SODIUM AND POTASSIUM AS ESTIMATED (J).

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U). No field blanks were identified in the sample delivery group.

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.
* No performance audit analyses were identified in the sample delivery group.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

No field duplicate samples or field split samples were identified in the SDG

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients $\geq$0.995?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is $\geq$10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: BO6NDO | REVIEWER: RCL | DATE: 1/25/93 | PAGE 1 OF 1

FIELD SAMPLE IDENT.	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
ALL	AA METALS	9/2 + 9/3/92	12/11/92	12/12-21/92	100	110	NONE
ALL	ICP METALS	↓	12/11/92	12/15/92	100	104	NONE

COMMENTS: All holding times were met.

ACTION: No action required.

CALIBRATION DATA SUMMARY - FORM B-2

SDG: B06NDO	REVIEWER: RCS	DATE: 1/25/93	PAGE 1 OF 1

INSTRUMENT:

CALIB. TYPE	CALIB. DATE	ANALYTE/COMPOUND	RF	RSD/%D/%R	SAMPLE(S) AFFECTED	QUALIFIER

COMMENTS: Instruments were calibrated as required. The necessary blanks and standards were run. All percent recoveries were w/in control limits.

ACTION: No action required.

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: B06ND0 | REVIEWER: RGL | DATE: 1/25/93 | PAGE 1 OF 1

CALIB. TYPE/SAMPLE IDENT.	ANALYTE/COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLE(S) AFFECTED	QUALIFIER
PREP BLANK	ALUMINUM	7316	B	N/A	MG/KG	36.58	N/A	NONE	NONE
CCB3	ARSENIC	.7				3.5			
CCB3	BARIUM	.84				4.2			
CCB2	BERYLLIUM	.24				1.2			
CCB1	CADMIUM	.22				1.1		B06ND0	U
								B06ND7	
								B06ND8	
PREP BLANK	CALCIUM	15.022				75.11		NONE	NONE
	CHROMIUM	1.244				6.22		B06ND1	U
CCB1	COPPER	1.34				6.7		NONE	NONE
PREP BLANK	IRON	7.498				37.49			
CCB1	MAGNESIUM	19.3				96.5			
ICB	POTASSIUM	59.06				295.3			
ICB	SILVER	.82				4.1			
PREP BLANK	SODIUM	16.338				81.69			
CCB1	ZINC	1.12				5.6			

COMMENTS: Contaminants were detected in the following blanks above their IDL: Aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, copper, iron, magnesium, potassium, silver, sodium, & zinc.

ACTION: For any blank w/ an analyte conc. > IDL but < CRQL, qualify as nondetects (U) associated samples w/ concentrations of the analyte < 5 times the highest blank concentration.

ACCURACY DATA SUMMARY - FORM B-4
MATRIX SPIKE RECOVERY AND LCS RECOVERY

SDG: B06NI0	REVIEWER: RCl	DATE: 1/25/93	PAGE 1 OF ___	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
MATRIX SPIKE	ANTIMONY	66.7	ALL	UJ
	MANGANESE	61.9	ALL	J
	ARSENIC	0.0	ALL	R
	SELENIUM	0.0	ALL	R

COMMENTS: The arsenic, antimony, manganese, & selenium matrix spike recoveries exceeded the control limit.

ACTION: Qualify results as estimated except those below 30% which are rejected.

PRECISION DATA SUMMARY - FORM B-5

SDG: B06NDO	REVIEWER: RCS	DATE: 1/26/93	PAGE 1 OF 1		
ANALYTE/COMPOUND	SAMPLE IDENT.	SAMPLE IDENT.	RPD	SAMPLE(S) AFFECTED	QUALIFIER
ALUMINUM	DUPLICATES		83.3	ALL	J
CALCIUM	↓		127.8	↓	↓
IRON	↓		54.6	↓	↓

COMMENTS: Duplicates for aluminum, calcium, & iron were outside control limits.

ACTION: Qualify associated results > IDL as estimated (J).

PRECISION AND ACCURACY DATA SUMMARY - FORM B-6
GFAA ANALYTICAL SPIKE RECOVERY

SDG: B06N00	REVIEWER: RCS	DATE: 1/25/93	PAGE 1 OF 1	
SAMPLE IDENT.	**ANALYTE/COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER**
ANALYTICAL SPIKE	ARSENIC	72.2	B06ND1	UJ
	SELENIUM	49	B06ND3	UJ
		41.6	B06ND5	
		46	B06ND6	
		44.5	B06ND8	
	ARSENIC	56.1	B06ND4	
		65.6	B06ND6	
		67.6	B06ND8	
	SELENIUM	117.1	B06ND1	

COMMENTS: Analytical spikes for arsenic & selenium are outside limits.

ACTION: Qualify results according to HPSM guidelines.

DATA QUALIFICATION SUMMARY - FORM 8-8

SDG: B06ND0	REVIEWER: RCP	DATE: 1/25/93	PAGE 1 OF 1
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
SODIUM	J	ALL	POTENTIAL FALSE POSITIVE → ICP INTERF.
POTASSIUM	J	ALL	↓
CADMIUM	U	B06ND0	CONTAMINANTS IN BLANKS
↓	↓	B06ND7	↓
↓	↓	B06ND8	↓
CHROMIUM	↓	B06ND1	↓
ANTIMONY	UJ	ALL	MATRIX SPIKE RECOVERY OUT
MANGANESE	J	ALL	↓
ARSENIC	R	ALL	↓
SELENIUM	R	ALL	↓
ALUMINUM	J	ALL	DUPLICATES OUTSIDE LIMITS
CALCIUM	↓	ALL	↓
IRON	↓	ALL	↓
ARSENIC	UJ	B06ND1	ANALYTICAL SPIKE OUT
SELENIUM	↓	B06ND1	↓
ARSENIC	↓	B06ND4	↓
↓	↓	B06ND6	↓
↓	↓	B06ND8	↓
SELENIUM	↓	B06ND3	↓
↓	↓	B06ND5	↓
↓	↓	B06ND6	↓
↓	↓	B06ND8	↓

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B06ND0

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-01S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2000		*	P	J
7440-36-0	Antimony	3.6	U	N	P	UJ
7440-38-2	Arsenic	2.9	U	EN	F	R
7440-39-3	Barium	53.1			P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.73	B		P	U
7440-70-2	Calcium	87300		*	P	J
7440-47-3	Chromium	6.5			P	
7440-48-4	Cobalt	1.8	B		P	
7440-50-8	Copper	15.2		*	P	
7439-89-6	Iron	5450		*	P	J
7439-92-1	Lead	11.5		*	F	
7439-95-4	Magnesium	4660			P	
7439-96-5	Manganese	194		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	3.3	B		P	
7440-09-7	Potassium	2890			P	J
7782-49-2	Selenium	3.7	U	EN	F	R
7440-22-4	Silver	0.53	U		P	
7440-23-5	Sodium	697	B		P	J
7440-28-0	Thallium	0.80	B		F	
7440-62-2	Vanadium	10.2	B		P	
7440-66-6	Zinc	240			P	
	Cyanide				NR	

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Color After: GREY Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06ND1

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-08SSAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-02S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	1020		*	P	J
7440-36-0	Antimony	3.3	U	N	P	UJ
7440-38-2	Arsenic	2.9	U	WN	F	R
7440-39-3	Barium	27.4	B		P	
7440-41-7	Beryllium	0.09	B		P	
7440-43-9	Cadmium	0.20	U		P	
7440-70-2	Calcium	12000		*	P	J
7440-47-3	Chromium	1.3	B		P	U
7440-48-4	Cobalt	1.5	B		P	
7440-50-8	Copper	14.3		*	P	
7439-89-6	Iron	4630		*	P	J
7439-92-1	Lead	1.6		*	F	
7439-95-4	Magnesium	4100			P	
7439-96-5	Manganese	88.1		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	4.0	B		P	
7440-09-7	Potassium	8350			P	J
7782-49-2	Selenium	3.8	U	WN	F	R
7440-22-4	Silver	0.49	U		P	
7440-23-5	Sodium	2070			P	J
7440-28-0	Thallium	0.26	U		F	
7440-62-2	Vanadium	5.4	B		P	
7440-66-6	Zinc	44.5			P	
	Cyanide				NR	

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Comments:

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B06ND2

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-03S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 95.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3970		*	P	J
7440-36-0	Antimony	3.5	U	N	P	UJ
7440-38-2	Arsenic	2.9	U	EN	F	R
7440-39-3	Barium	69.8			P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.20	U		P	
7440-70-2	Calcium	37800		*	P	J
7440-47-3	Chromium	5.4			P	
7440-48-4	Cobalt	4.7	B		P	
7440-50-8	Copper	11.3		*	P	
7439-89-6	Iron	11300		*	P	J
7439-92-1	Lead	2.3		*	F	
7439-95-4	Magnesium	4020			P	
7439-96-5	Manganese	206		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	4.9	B		P	
7440-09-7	Potassium	1670			P	J
7782-49-2	Selenium	3.8	U	EN	F	R
7440-22-4	Silver	0.51	U		P	
7440-23-5	Sodium	462	B		P	J
7440-28-0	Thallium	0.26	U		F	
7440-62-2	Vanadium	22.4			P	
7440-66-6	Zinc	117			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06ND3

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-04S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	1550		*	P	J
7440-36-0	Antimony	3.5	U	N	P	UJ
7440-38-2	Arsenic	2.9	U	EN	F	R
7440-39-3	Barium	45.1			P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.21	U		P	
7440-70-2	Calcium	93200		*	P	J
7440-47-3	Chromium	3.4			P	
7440-48-4	Cobalt	1.3	B		P	
7440-50-8	Copper	20.5		*	P	
7439-89-6	Iron	3510		*	P	J
7439-92-1	Lead	2.4		*	F	
7439-95-4	Magnesium	2400			P	
7439-96-5	Manganese	93.0		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	3.2	B		P	
7440-09-7	Potassium	1540			P	J
7782-49-2	Selenium	3.7	U	WN	F	R
7440-22-4	Silver	0.52	U		P	
7440-23-5	Sodium	1390			P	J
7440-28-0	Thallium	0.26	U		F	
7440-62-2	Vanadium	7.3	B		P	
7440-66-6	Zinc	267			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06ND4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-05S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2480		*	P	J
7440-36-0	Antimony	3.4	U	N	P	UJ
7440-38-2	Arsenic	3.0	U	WN	F	R
7440-39-3	Barium	55.5			P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.20	U		P	
7440-70-2	Calcium	73300		*	P	J
7440-47-3	Chromium	4.5			P	
7440-48-4	Cobalt	2.7	B		P	
7440-50-8	Copper	18.1		*	P	
7439-89-6	Iron	5090		*	P	J
7439-92-1	Lead	2.9		*	F	
7439-95-4	Magnesium	4430			P	
7439-96-5	Manganese	116		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	3.6	B		P	
7440-09-7	Potassium	2570			P	J
7782-49-2	Selenium	3.9	U	EN	F	R
7440-22-4	Silver	0.51	U		P	
7440-23-5	Sodium	6500			P	J
7440-28-0	Thallium	0.27	U		F	
7440-62-2	Vanadium	10.3			P	
7440-66-6	Zinc	204			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-06S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 97.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3040		*	P	J
7440-36-0	Antimony	3.5	U	N	P	UJ
7440-38-2	Arsenic	3.0	U	N	F	R
7440-39-3	Barium	38.5	B		P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.21	U		P	
7440-70-2	Calcium	46000		*	P	J
7440-47-3	Chromium	5.3			P	
7440-48-4	Cobalt	3.0	B		P	
7440-50-8	Copper	13.1		*	P	
7439-89-6	Iron	6110		*	P	J
7439-92-1	Lead	3.7		*	F	
7439-95-4	Magnesium	3330			P	
7439-96-5	Manganese	109		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	4.9	B		P	
7440-09-7	Potassium	811	B		P	J
7782-49-2	Selenium	3.9	U	WN	F	R
7440-22-4	Silver	0.51	U		P	
7440-23-5	Sodium	674	B		P	J
7440-28-0	Thallium	0.27	U		F	
7440-62-2	Vanadium	11.4			P	
7440-66-6	Zinc	70.6			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-07S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 95.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2530		*	P	J
7440-36-0	Antimony	3.3	U	N	P	UJ
7440-38-2	Arsenic	2.8	U	WN	F	R
7440-39-3	Barium	82.7			P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.20	U		P	J
7440-70-2	Calcium	72300		*	P	
7440-47-3	Chromium	3.5			P	
7440-48-4	Cobalt	1.6	B		P	
7440-50-8	Copper	21.2		*	P	
7439-89-6	Iron	4300		*	P	J
7439-92-1	Lead	3.8		*	F	
7439-95-4	Magnesium	4260			P	
7439-96-5	Manganese	123		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	3.2	B		P	
7440-09-7	Potassium	6900			P	J
7782-49-2	Selenium	3.7	U	WN	F	R
7440-22-4	Silver	0.50	U		P	
7440-23-5	Sodium	1640			P	J
7440-28-0	Thallium	0.25	U		F	
7440-62-2	Vanadium	7.6	B		P	
7440-66-6	Zinc	174			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND7

Lab Name: SKINNER & SHERMAN LABS Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-08S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 94.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	760		*	P	J
7440-36-0	Antimony	3.6	U	N	P	UJ
7440-38-2	Arsenic	3.0	U	EN	F	R
7440-39-3	Barium	53.5			P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.58	B		P	U
7440-70-2	Calcium	162000		*	P	J
7440-47-3	Chromium	4.0			P	
7440-48-4	Cobalt	0.57	U		P	
7440-50-8	Copper	12.0		*	P	
7439-89-6	Iron	1660		*	P	J
7439-92-1	Lead	13.9		*	F	
7439-95-4	Magnesium	4360			P	J
7439-96-5	Manganese	152		N	P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	1.4	B		P	
7440-09-7	Potassium	2600			P	J
7782-49-2	Selenium	4.0	U	EN	F	R
7440-22-4	Silver	0.53	U		P	
7440-23-5	Sodium	4370			P	J
7440-28-0	Thallium	0.27	U		F	
7440-62-2	Vanadium	3.6	B		P	
7440-66-6	Zinc	294			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06ND8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-09S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 93.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	905		*	P	J
7440-36-0	Antimony	3.5	U	N	P	UJ
7440-38-2	Arsenic	2.9	U	WN	F	R
7440-39-3	Barium	22.0	B		P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.36	B		P	U
7440-70-2	Calcium	35800		*	P	J
7440-47-3	Chromium	2.8			P	
7440-48-4	Cobalt	0.81	B		P	
7440-50-8	Copper	12.5		*	P	
7439-89-6	Iron	2420		*	P	J
7439-92-1	Lead	5.6		*	F	
7439-95-4	Magnesium	1500			P	
7439-96-5	Manganese	60.3		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	2.5	B		P	
7440-09-7	Potassium	1790			P	J
7782-49-2	Selenium	3.8	U	WN	F	R
7440-22-4	Silver	0.52	U		P	
7440-23-5	Sodium	743	B		P	J
7440-28-0	Thallium	0.26	U		F	
7440-62-2	Vanadium	4.2	B		P	
7440-66-6	Zinc	282			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

010

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06NF0

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-09-088SAS No.: SDG No.: B06ND0

Matrix (soil/water): SOIL Lab Sample ID: 09390-10S

Level (low/med): LOW Date Received: 09/22/92

% Solids: 92.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	1960		*	P	J
7440-36-0	Antimony	3.5	U	N	P	UJ
7440-38-2	Arsenic	3.1	U	EN	F	R
7440-39-3	Barium	41.3	B		P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.21	U		P	
7440-70-2	Calcium	111000		*	P	J
7440-47-3	Chromium	5.0			P	
7440-48-4	Cobalt	1.7	B		P	
7440-50-8	Copper	17.5		*	P	
7439-89-6	Iron	4800		*	P	J
7439-92-1	Lead	5.7		*	F	
7439-95-4	Magnesium	5860			P	
7439-96-5	Manganese	82.6		N	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	3.3	B		P	
7440-09-7	Potassium	967	B		P	J
7782-49-2	Selenium	4.0	U	EN	F	R
7440-22-4	Silver	0.52	U		P	
7440-23-5	Sodium	798	B		P	J
7440-28-0	Thallium	0.27	U		F	
7440-62-2	Vanadium	8.3	B		P	
7440-66-6	Zinc	295			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture:

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator C.E. Heiden

Company Contact Dan Landeen Telephone 376-1038

Project Designation/Sampling Locations 100 Area Biota Sampling Collection Date 9/2 & 9/3/92

Ice Chest No. RM # 105 Field Logbook No. WHC-N-444

Bill of Lading/Airbill No. 252.156 752 1 Offsite Property No. W92-0-0622 #23

Method of Shipment Emery

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks N/A

Sample Identification

B06ND0 - Coyote Scat
B06ND1 - Coyote Scat
B06ND2 - Coyote Scat
B06ND3 - Raptor Pellets
B06ND4 - Coyote Scat
B06ND5 - Raptor Pellets
B06ND6 - Coyote Scat
B06ND7 - Coyote Scat
B06ND8 - Raptor Pellets
B06NF0 - Coyote Scat

☐ Field Transfer of Custody

CHAIN OF POSSESSION		(Sign and Print Names)
Relinquished by: C.E. Heiden C.E. Heiden	Received by: Kermit Blum	Date/Time: 9-14-92 0800 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: UK 8-11-93
Relinquished by:	Received by:	Date/Time: 040

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 9-12-92; opened 9-14-92 - KB

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector C.E. Heiden Date Sampled _____ Time _____ hours

Company Contact Dan Landeen. Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06ND0	Ziplock Bag	Coyote Scat	TAL Metals (Omit Mercury) CLP
B06ND1		Coyote Scat	Total Gamma, Sr-90 LAB SOP
B06ND2		Coyote Scat	
B06ND3		Raptor Pellets	
B06ND4		Coyote Scat	
B06ND5		Raptor Pellets	
B06ND6		Coyote Scat	
B06ND7		Coyote Scat	
B06ND8		Raptor Pellets	TAL Metals (Omit Mercury) CLP
B06NF0	Ziplock Bag	Coyote Scat	Total Gamma, Sr-90 LAB SOP

Field Information** —

Special Handling and/or Storage —

Possible Sample Hazards — CK 8-11-93

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 9-14-92

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90)

7082

PAGE 1 TMA/Norcal CHAIN OF CUSTODY ORD # N2-09-098

RCVD: 09/14/92 DUE: 09/21/92 09/18/92 10:45:06 KEEP: 12/20/92 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	B06ND0	SCA2(1)	HOLD
02A	B06ND1	SCA2(1)	HOLD
03A	B06ND2	SCA2(1)	HOLD
04A	B06ND3	SCA2(1)	HOLD
05A	B06ND4	SCA2(1)	HOLD
06A	B06ND5	SCA2(1)	HOLD
07A	B06ND6	SCA2(1)	HOLD
08A	B06ND7	SCA2(1)	HOLD
09A	B06ND8	SCA2(1)	HOLD
10A	B06NF0	SCA2(1)	HOLD

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
[illegible]		Mod. 4	09/18	[illegible]	09/18
T Cary	12/7/92	SCA 2		A1	12/7/92

7082

XnP 1/28/93

100 AREA BIOTA RADIOCHEMICAL DATA VALIDATION REPORT

FOR SDG N2-09-098-7082 (Coyote Scat and Raptor Pellets)

The 100 Area Biota Radiochemical Validation was performed to the requirements outlined in the draft procedure titled "Data Validation Procedure for Radiological Analysis, Rev. 0, June 18, 1991."

The SDG consisted of 10 samples. All samples were identified on the Chain of custody as being "Coyote Scat and Raptor Pellets". All samples were analyzed at the Thermo Analytical Laboratory Norcal Laboratory. Radiological parameters of interest were: Gross Gamma Scan, and Strontium - 90.

The radiological validation process, in part, is a detailed and in-depth technical review of the laboratory counting systems used, standards and quality control used in analyzing the samples. Review of chain of custody requirements, completeness of data reported and contract required detection limits are also part of the validation process. The technical review of the laboratory counting systems is documented on the attached appendices taken from the radiological data validation procedure. Sample analysis batch Quality Control (QC) and instrument performance are reviewed on an individual delivery group basis.

<u>Data limitations and explanation of qualifiers for SDG # N2-09-098-7082</u>

STRONTIUM-90

The processing group contains the following sample numbers: B06ND0, B06ND1, B06ND2, B06ND3, B06ND4, B06ND5, B06ND6, B06ND7, B06ND8, and B06NF0.

All counting systems evaluated and found to be acceptable. The batch specific QC samples did not result in any qualification of the data.

NOTE: Activity was detected in the blank but the activity is below the MDA.

XnP
11/28/93

100 AREA BIOTA RADIOCHEMICAL DATA VALIDATION REPORT

FOR SDG N2-09-098-7082 (Coyote Scat and Raptor Pellets)

GAMMA SCAN

The processing group contains the following sample numbers: B06ND0, B06ND1, B06ND2, B06ND3, B06ND4, B06ND5, B06ND6, B06ND7, B06ND8, and B06NF0.

The Co-60 recovery in the Laboratory Control Sample was 74% which is below the acceptable range (Lower limit of 80%). All sample results for Co-60 were non detectable. Qualify all Co-60 results for all samples as "UJ" estimated non detects. The sample and duplicate results do differ greatly, however the results are sufficiently close to the detection limit that a limit of ± 2 times the Lower Limit of Detection applies. The duplicate results are thus acceptable. All other QC samples and method specific requirements are within acceptable limits.

N2-09-098-7082

XMP 11/27/92

Supplemental Requirements for Analyses Using
Gamma Spectroscopy

C.0 Completeness Checklist

Analysis Results

O Results Report for Sample Analyses and Reanalyses
O Raw Data (Spectra, Printouts of Counts per Channel, Notebook Pages)
O Calculation Sheets
O Sample Identifications
O Detector Identification and Counting Position
O Analysis Date and Initials of Analyst
O Amounts of Samples Counted

Initial and Continuing Calibration

O Detector Identification
O Calibration Date(s) and Initials of Analyst
O Identification of Calibration and Check Standards including Radionuclides, Certification, Expiration Date, and Activity
O Amount of (Check) Standard Used
O Raw Data including Counts and Count Duration for Standards
O Efficiencies and/or Geometry and Matrix Factors
O Raw Data of Background Counts, Count Dates, and Duration of Counts
O Kev/Channel
O FWHM

Blanks

O Detector Identification
O Date of Analysis
O MDA of Method
O Amounts of Reagents Used in Blank
O Raw Data

N2-09-098-7082

XNP 1/27/92

Supplemental Requirements for Analyses Using
Gamma Spectroscopy (Cont.)

Duplicates

O Detector Identification
O Date of Analysis
O Amounts of Samples
O Count Durations
O Sample Identifications
O Results of Analyses and Calculated Precision
O Raw Data

Radiometric and Gravimetric Yields

N/A Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
N/A Weights of Precipitates or Solids Counted
N/A Calculated Recoveries

Laboratory Control Samples

O Detector Identification
O Date of Analysis
O Calculation of Recoveries
O Results of Analyses

N2-09-098-7082

Supplemental Requirements for Analyses Using Gas Proportional Counters

A.0 Completeness Checklist

Analysis Results

O Results Report for Sample Analyses and Reanalyses
O Raw Data (Counting Logs, Printouts, Notebook Pages)
O Calculation Sheets
O Sample Identifications
O Detector Identification
O Analysis Date and Initials of Analyst
O Amounts of Samples Prepared or Counted
O Weights of Solids Counted

Initial and Continuing Calibration

O Detector Identification
O Calibration Date(s) and Initials of Analyst
O Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
O Amount of (Check) Standard Used
O Raw Data including Counts and Count Duration for Standards
O Weights of Preparations
O Efficiencies
O Weights of Carriers Added, If Applicable
O Results of Statistical Tests Used to Evaluate Instrument Reliability and Efficiency Checks
O Raw Data of Background Counts and Count Duration
O Results of Statistical Test Used to Evaluate Instrument Background
O Control Limits for Check Source and Background Counts

Blanks

O Detector Identification
O Date of Analysis
O MDA of Method
O Amounts of Reagents Used in Blank

N2-09-098-7082

Supplemental Requirements for Analyses Using Gas Proportional Counters (Cont.)

Radiometric and Gravimetric Yields

__O__ Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
__O__ Weights of Precipitates or Solids Counted
__O__ Calculated Recoveries

Duplicates

__O__ Detector Identification
__O__ Date of Analysis
__O__ Aliquots of Samples
__O__ Weights of Solids Counted
__O__ Count Durations
__O__ Sample Identifications
__O__ Calculated Precision

Laboratory Control Samples

__O__ Detector Identification
__O__ Date of Analysis
__O__ Calculation of Recoveries
__O__ Results of Analyses

SDG 7082	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of coyote scat samples from 100 Area Biota Sampling Location (TMA/Norcal Group 7082) are reported herein. TMA/Norcal Group 7082 is comprised of the ten samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 10.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. WHC-N-444.

1.2 SAMPLE VOLUME

Ziplock bags with the samples were received for the analyses.

1.3 MISSING SAMPLES

All samples were accounted for in an undamaged condition.

1.4 HOLDING TIMES

The collections were made between 9/2/92 and 9/3/92 and the sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control, a blank, and a replicate. All original analyses were performed with QC samples 7082-11 through 14.

The QC samples were prepared and labelled by the quality control officer. Copies of The QC notebook pages are included in the data package.

2.1 LABORATORY CONTROL SAMPLES

LCS recoveries for all nuclides were good. The MDA's for ^{90}Sr and gamma nuclides meet the RDL requirements. Only ^{60}Co and ^{137}Cs were added in the laboratory control sample. The MDA's of ^{59}Fe and europium were underlined because they were higher than the RDL. The MDA was based on a nominal aliquot of 750 g.

2.2 BLANKS

MDA's for ^{90}Sr meet the RDL requirements. The MDA's for gamma nuclides were underlined because they were than the RDL. Blank MDA's were calculated on the basis of a nominal aliquot of 750 g.

SDG 7082	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

The results were satisfactory for the replicate analysis. The MDA's for ^{59}Fe, ^{60}Co, ^{137}Cs, europium isotopes were underlined because they were higher than RDL. Only small aliquots (0.7 - 42 gm) were available for analysis, instead of 750 g required by MDA calculations.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for thirteen analysis was 70 ± 17%). The lowest yield was 48% and the highest was 79%. The average MDA was 1.0 ± 0.41 pCi/g. Positive ^{90}Sr concentration was not found in any of the samples except in 7082-10.

3.3 Gamma Scan Analyses: Gamma scan analysis did not find gamma nuclides in any of the samples except in 7082-8 which had 0.44 pCi/g. Again, MDA's for gamma nuclides were higher due to small aliquots available for gamma analysis.

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator C.E. Heiden

Company Contact Dan Landeen Telephone 376-1038

Project Designation/Sampling Locations 100 Area Biota Sampling Collection Date 9/2 & 9/3/92

Ice Chest No. RM # 105 Field Logbook No. WHC-N-444

Bill of Lading/Airbill No. 2521567521 Offsite Property No. W92-0-0622 #23

Method of Shipment Emery

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks N/A

Sample Identification

B06ND0 - Coyote Scat
B06ND1 - Coyote Scat
B06ND2 - Coyote Scat
B06ND3 - Raptor Pellets
B06ND4 - Coyote Scat
B06ND5 - Raptor Pellets
B06ND6 - Coyote Scat
B06ND7 - Coyote Scat
B06ND8 - Raptor Pellets
B06NF0 - Coyote Scat

☐ Field Transfer of Custody

CHAIN OF POSSESSION		(Sign and Print Names)
Relinquished by: C.E. Heiden C.E. Heiden	Received by: Kermit Blum	Date/Time: 9-14-92 0800 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 040

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 9-12-92; opened 9-14-92 - KB

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector C.E. Heiden Date Sampled _____ Time _____ hours

Company Contact Dan Landeen. Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06ND0	Ziplock Bag	Coyote Scat	TAL Metals (Omit Mercury) CLP
B06ND1		Coyote Scat	Total Gamma, Sr-90 LAB SOP
B06ND2		Coyote Scat	
B06ND3		Raptor Pellets	
B06ND4		Coyote Scat	
B06ND5		Raptor Pellets	
B06ND6		Coyote Scat	
B06ND7		Coyote Scat	
B06ND8		Raptor Pellets	TAL Metals (Omit Mercury) CLP
B06NF0	Ziplock Bag	Coyote Scat	Total Gamma, Sr-90 LAB SOP

Field Information** —

Special Handling and/or Storage —

Possible Sample Hazards —

014

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 9-14-92

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90)

N209098-01

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND0

XNP 1/28/93

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-01	Client sample id	B06ND0
Dept sample id	7082-001	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Strontium 90	10098-97-2	-0.39	1.3	1.2	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	7.7	7.0				GAM
Iron 59		U		1.6	0.050	U	GAM
Chromium 51	14392-02-0	U		12		U	GAM
Cobalt 60	10198-40-0	U		0.89 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		1.1		U	GAM
Ruthenium 106	13967-48-1	U		4.7		U	GAM
Cesium 134	17967-70-9	U		0.58		U	GAM
Cesium 137	10045-97-3	U		0.66	0.050	U	GAM
Europium 152	14683-23-9	U		0.96	0.10	U	GAM
Europium 154	15585-10-1	U		0.67	0.10	U	GAM
Radium 226	13982-67-7	0.98	0.83		0.10		GAM
Thorium 228	14274-82-9	0.67	0.63				GAM
Thorium 232	7440-29-1	U		2.7		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XNP 1/28/93

N209098-02

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND1

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-02	Client sample id	B06ND1
Dept sample id	7082-002	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.50	0.73	1.6	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.5	3.9				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		7.6		U	GAM
Cobalt 60	10198-40-0	U		0.35 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		0.88		U	GAM
Ruthenium 106	13967-48-1	U		3.2		U	GAM
Cesium 134	17967-70-9	U		0.29		U	GAM
Cesium 137	10045-97-3	U		0.41	0.050	U	GAM
Europium 152	14683-23-9	U		0.60	0.10	U	GAM
Europium 154	15585-10-1	U		0.39	0.10	U	GAM
Radium 226	13982-67-7	U		0.76	0.10	U	GAM
Thorium 228	14274-82-9	0.47	0.42				GAM
Thorium 232	7440-29-1	U		1.9		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XnP 1/28/93

N209098-03

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND2

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-03	Client sample id	B06ND2
Dept sample id	7082-003	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.21	1.7	0.83	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	8.5	7.4				GAM
Iron 59		U		2.3	0.050	U	GAM
Chromium 51	14392-02-0	U		12		U	GAM
Cobalt 60	10198-40-0	U		0.51 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		1.3		U	GAM
Ruthenium 106	13967-48-1	U		4.6		U	GAM
Cesium 134	17967-70-9	U		0.54		U	GAM
Cesium 137	10045-97-3	U		0.64	0.050	U	GAM
Europium 152	14683-23-9	U		0.83	0.10	U	GAM
Europium 154	15585-10-1	U		0.54	0.10	U	GAM
Radium 226	13982-67-7	0.76	0.51		0.10		GAM
Thorium 228	14274-82-9	1.2	0.74				GAM
Thorium 232	7440-29-1	U		2.7		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XNP 1/28/93

N209098-04

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND3

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-04	Client sample id	B06ND3
Dept sample id	7082-004	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.74	0.36	0.92	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		27		U	GAM
Iron 59		U		7.8	0.050	U	GAM
Chromium 51	14392-02-0	U		28		U	GAM
Cobalt 60	10198-40-0	U		1.3 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		3.1		U	GAM
Ruthenium 106	13967-48-1	U		14		U	GAM
Cesium 134	17967-70-9	U		1.7		U	GAM
Cesium 137	10045-97-3	U		1.3	0.050	U	GAM
Europium 152	14683-23-9	U		1.9	0.10	U	GAM
Europium 154	15585-10-1	U		1.4	0.10	U	GAM
Radium 226	13982-67-7	U		3.1	0.10	U	GAM
Thorium 228	14274-82-9	U		1.8		U	GAM
Thorium 232	7440-29-1	U		6.2		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-05

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND4

XNP 1/28/93

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-05	Client sample id	B06ND4
Dept sample id	7082-005	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.11	0.28	0.91	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.7	3.6				GAM
Iron 59		U		1.3	0.050	U	GAM
Chromium 51	14392-02-0	U		7.7		U	GAM
Cobalt 60	10198-40-0	U		0.45 UT	0.050	U	GAM
Zinc 65	17982-39-3	U		0.89		U	GAM
Ruthenium 106	13967-48-1	U		2.9		U	GAM
Cesium 134	17967-70-9	U		0.40		U	GAM
Cesium 137	10045-97-3	U		0.33	0.050	U	GAM
Europium 152	14683-23-9	U		0.56	0.10	U	GAM
Europium 154	15585-10-1	U		0.36	0.10	U	GAM
Radium 226	13982-67-7	0.71	0.47		0.10		GAM
Thorium 228	14274-82-9	U		0.76		U	GAM
Thorium 232	7440-29-1	U		1.5		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XNP 1/28/93

N209098-06

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND5

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-06	Client sample id	B06ND5
Dept sample id	7082-006	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	1.1	0.92	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		87		U	GAM
Iron 59		U		31	0.050	U	GAM
Chromium 51	14392-02-0	U		150		U	GAM
Cobalt 60	10198-40-0	U		13 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		17		U	GAM
Ruthenium 106	13967-48-1	U		72		U	GAM
Cesium 134	17967-70-9	U		8.0		U	GAM
Cesium 137	10045-97-3	U		6.5	0.050	U	GAM
Europium 152	14683-23-9	U		13	0.10	U	GAM
Europium 154	15585-10-1	U		8.2	0.10	U	GAM
Radium 226	13982-67-7	U		16	0.10	U	GAM
Thorium 228	14274-82-9	U		9.7		U	GAM
Thorium 232	7440-29-1	U		31		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVO-DS
Version	2.20
Report date	11/13/92

XnP 1/28/93

N209098-07

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND6

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-07	Client sample id	B06ND6
Dept sample id	7082-007	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.006	0.27	0.98	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		16		U	GAM
Iron 59		U		3.6	0.050	U	GAM
Chromium 51	14392-02-0	U		19		U	GAM
Cobalt 60	10198-40-0	U		1.0 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		2.5		U	GAM
Ruthenium 106	13967-48-1	U		9.6		U	GAM
Cesium 134	17967-70-9	U		0.97		U	GAM
Cesium 137	10045-97-3	U		1.1	0.050	U	GAM
Europium 152	14683-23-9	U		1.4	0.10	U	GAM
Europium 154	15585-10-1	U		0.84	0.10	U	GAM
Radium 226	13982-67-7	1.3	1.3		0.10		GAM
Thorium 228	14274-82-9	U		1.3		U	GAM
Thorium 232	7440-29-1	U		3.9		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XNP 1/28/93

N209098-08

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND7

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-08	Client sample id	B06ND7
Dept sample id	7082-008	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.073	1.9	1.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.6	4.2				GAM
Iron 59		U		1.8	0.050	U	GAM
Chromium 51	14392-02-0	U		6.2		U	GAM
Cobalt 60	10198-40-0	U		0.51 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		0.80		U	GAM
Ruthenium 106	13967-48-1	U		2.8		U	GAM
Cesium 134	17967-70-9	U		0.37		U	GAM
Cesium 137	10045-97-3	0.44	0.38		0.050		GAM
Europium 152	14683-23-9	U		0.64	0.10	U	GAM
Europium 154	15585-10-1	U		0.40	0.10	U	GAM
Radium 226	13982-67-7	U		0.77	0.10	U	GAM
Thorium 228	14274-82-9	U		0.60		U	GAM
Thorium 232	7440-29-1	U		1.5		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XnP
1/28/93

N209098-09

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06ND8

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-09	Client sample id	B06ND8
Dept sample id	7082-009	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.15	0.24	0.97	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	10	5.3				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		9.2		U	GAM
Cobalt 60	10198-40-0	U		0.43 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		1.0		U	GAM
Ruthenium 106	13967-48-1	U		3.8		U	GAM
Cesium 134	17967-70-9	U		0.42		U	GAM
Cesium 137	10045-97-3	U		0.45	0.050	U	GAM
Europium 152	14683-23-9	U		0.70	0.10	U	GAM
Europium 154	15585-10-1	U		0.45	0.10	U	GAM
Radium 226	13982-67-7	U		0.74	0.10	U	GAM
Thorium 228	14274-82-9	0.66	0.52				GAM
Thorium 232	7440-29-1	U		1.6		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

XnP 1/28/93

N209098-10

TMA NORCAL
REPORTING GROUP 7082

DATA SHEET

B06NF0

SDG	7082	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209098-10	Client sample id	B06NF0
Dept sample id	7082-010	Matrix	BIOTA
Received	09/14/92	Collected	09/02/92
% moisture		Chain of custody id	WHC-N-444

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	4.5	0.60	1.1	2.0		Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		34		U	GAM
Iron 59		U		8.0	0.050	U	GAM
Chromium 51	14392-02-0	U		34		U	GAM
Cobalt 60	10198-40-0	U		2.4 UJ	0.050	U	GAM
Zinc 65	17982-39-3	U		4.6		U	GAM
Ruthenium 106	13967-48-1	U		18		U	GAM
Cesium 134	17967-70-9	U		2.4		U	GAM
Cesium 137	10045-97-3	U		2.0	0.050	U	GAM
Europium 152	14683-23-9	U		3.4	0.10	U	GAM
Europium 154	15585-10-1	U		2.2	0.10	U	GAM
Radium 226	13982-67-7	U		3.7	0.10	U	GAM
Thorium 228	14274-82-9	U		2.2		U	GAM
Thorium 232	7440-29-1	U		8.2		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/13/92

N209098-11

TMA NORCAL

REPORTING GROUP 7082

LAB CONTROL SAMPLE

LAB CONTROL SAMPLE

SDG 7082
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N209098-11
Dept sample id 7082-011
% moisture

Matrix BIOTA
Material

PARAMETER	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
Strontium 90	10	1.2	1.0	2.0		Y	10.1	0.40	99	75-125	
GAMMA SCAN ANALYTES											
Potassium 40	U		2.0		U	GAM					
Iron 59	U		0.51	0.050	U	GAM					
Chromium 51	U		1.5		U	GAM					
Cobalt 60	1.5	0.39		0.050		GAM	2.04	0.082	74	66-134	
Zinc 65	U		0.63		U	GAM					
Ruthenium 106	U		2.0		U	GAM					
Cesium 134	U		0.23		U	GAM					
Cesium 137	1.6	0.32		0.050		GAM	1.66	0.066	96	63-137	
Europium 152	U		0.36	0.10	U	GAM					
Europium 154	U		0.23	0.10	U	GAM					
Radium 226	U		0.45	0.10	U	GAM					
Thorium 228	U		0.33		U	GAM					
Thorium 232	U		1.2		U	GAM					

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-LCS
Version 2.20
Report date 11/13/92

N209098-12

TMA NORCAL
REPORTING GROUP 7082

REAGENT BLANK

Reagent Blank

SDG 7082
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N209098-12
Dept sample id 7082-012
% moisture
Matrix BIOTA
Material

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.22	0.26	0.83	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		3.2		U	GAM
Iron 59		U		0.22	0.050	U	GAM
Chromium 51	14392-02-0	U		1.2		U	GAM
Cobalt 60	10198-40-0	U		0.27	0.050	U	GAM
Zinc 65	17982-39-3	U		0.28		U	GAM
Ruthenium 106	13967-48-1	U		1.4		U	GAM
Cesium 134	17967-70-9	U		0.18		U	GAM
Cesium 137	10045-97-3	U		0.14	0.050	U	GAM
Europium 152	14683-23-9	U		0.35	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Radium 226	13982-67-7	U		0.42	0.10	U	GAM
Thorium 228	14274-82-9	U		0.26		U	GAM
Thorium 232	7440-29-1	U		0.80		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.20
Report date 11/13/92

N209098-13

TMA NORCAL

REPORTING GROUP 7082

REPLICATE

B06ND0

SDG	7082			Client	Westinghouse Hanford
Contact	Dinkar Kharkar			Contract	MBH-SVV-069262
	REPLICATE		ORIGINAL		
Lab sample id	N209098-13	Lab sample id	N209098-01	Client sample id	B06ND0
Dept sample id	7082-013	Dept sample id	7082-001	Matrix	BIOTA
		Received	09/14/92	Collected	09/02/92
% moisture		% moisture		Chain of custody id	WHC-N-444

PARAMETER	REPLICATE pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST	ORIGINAL pCi/G	2σ ERR (COUNT)	MDA pCi/G	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Strontium 90	0.18	0.24	0.93	2.0	U	Y	-0.39	1.3	1.2	U	-		
GAMMA SCAN ANALYTES													

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-REP
Version	2.20
Report date	11/13/92

N209098-14

TMA NORCAL

REPORTING GROUP 7082

REPLICATE

B06ND2

SDG 7082
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

REPLICATE		ORIGINAL		
Lab sample id	N209098-14	Lab sample id	N209098-03	Client sample id B06ND2
Dept sample id	7082-014	Dept sample id	7082-003	Matrix BIOTA
		Received	09/14/92	Collected 09/02/92
% moisture		% moisture		Chain of custody id WHC-N-444

PARAMETER	REPLICATE 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
GAMMA SCAN ANALYTES												
Potassium 40	13	8.3				GAM	8.5	7.4			42	159
Iron 59	U		2.2	0.050	U	GAM	U		2.3	U	-	
Chromium 51	U		13		U	GAM	U		12	U	-	
Cobalt 60	U		0.61	0.050	U	GAM	U		0.51	U	-	
Zinc 65	U		1.2		U	GAM	U		1.3	U	-	
Ruthenium 106	U		5.5		U	GAM	U		4.6	U	-	
Cesium 134	U		0.57		U	GAM	U		0.54	U	-	
Cesium 137	U		0.58	0.050	U	GAM	U		0.64	U	-	
Europium 152	U		0.68	0.10	U	GAM	U		0.83	U	-	
Europium 154	U		0.40	0.10	U	GAM	U		0.54	U	-	
Radium 226	U		1.2	0.10	U	GAM	0.76	0.51			45	202
Thorium 228	U		0.80		U	GAM	1.2	0.74			40	167
Thorium 232	U		2.6		U	GAM	U		2.7	U	-	

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-REP
Version 2.20
Report date 11/13/92